

PHD DISSERTATION

Sustainable Environmental Management in the Niger Delta Region of Nigeria: Effects of Hydrocarbon Pollution on Local Economy

A thesis approved by the Faculty of Environmental Sciences and Process Engineering at the Brandenburg University of Technology Cottbus in partial fulfillment of the requirement for the award of the academic degree of PhD (Doctor of Philosophy) in Environmental and Resource Management

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DOKTORARBEIT

Nachhaltiges Umweltmanagement in der Region des Niger Delta in Nigeria: Auswirkungen der Verunreinigung durch Kohlenwasserstoffe auf die örtliche Wirtschaft

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genehmigte Dissertation

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DECLARATION

I hereby declare that this dissertation is the result of my original research work carried out at the Brandenburg University of Technology Cottbus, Germany within the framework of the International PhD (*Doctor of Philosophy*) program in Environmental and Resource Management.

Professor Jürgen Ertel, Head Chair of Industrial Sustainability of the Brandenburg University of Technology Cottbus, has been the main Supervisor of this research. Professor Michael Schmidt, Head Chair of Environmental Planning of the Brandenburg University of Technology Cottbus, Germany, acted as co-supervisor.

I hereby admit that this dissertation has never been submitted in whole or in part for a degree at Brandenburg University of Technology Cottbus, or elsewhere. References to other people's research have been duly cited and acknowledged in this research work accordingly.

Ugochukwu Collins Norberth Chinedu

DEDICATION

This research work is dedicated to:

God Almighty who led me throughout my stay in Germany

May your name be glorified now and forever, Amen.

My beloved wife - Mrs. Onyekachi Evangeline Ugochukwu and our unborn children.

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ACRONYMS AND ABBREVIATIONS

ADP	Agricultural Development Program
CNG	Compressed Natural Gas
DPR	Department of Petroleum Resources
EDLAS	Educationally Less Advantaged States
EIA	Environmental Impact Assessment
EIA	Energy Information Administration
EPWMA	Environmental Protection and Waste Management Agency
FEPA	Federal Environmental Protection Agency
FMEV	Federal Ministry of Environment
FPSO	Floating Production, Storage and Offloading
GDP	Gross Domestic Product
GHG	Green House Gases
HDI	Human Development Index
ICZM	Integrated Coastal Zone Management
IMF	International Monetary Fund
IOC	International Oil Company
ISO	International Organization of Standardization
ISO 14001	ISO Standards for Environmental Management Systems
IUCN	The World Conservation Union
JDZ	Joint Development Zone
JV	Joint Venture
LNG	Liquefied Natural Gas
MDG	Millennium Development Goal
MEND	Movement for the Emancipation of the Niger Delta
NALDA	National Agricultural Land Development Authority
NDDC	Niger Delta Development Commission
NDE	National Directorate of Employment
NDES	Niger Delta Environmental Survey
NDWC	Niger Delta Wetlands Center
NEEDS	National Economic Empowerment and Development Strategy
NERFUND	National Economic Recovery Fund

NLNG	Nigeria Liquefied Natural Gas
NNPC	Nigerian National Petroleum Corporation
NOSDRA	National Oil Spill Detection and Response Agency
NPC	Nigerian Population Commission
OECD	Organization for Economic Co-operation and Development
OEL	Oil Exploration License
OGJ	Oil and Gas Journal
OML	Oil Mining Lease
OPA	Oil Pollution Act
OPEC	Organization of Petroleum Exporting Countries
OPTS	Oil Producers Trade Sector
PHC	Primary Health Care
PPM	Parts Per Million
PPP	Purchasing Power Parity
SPDC	Shell Petroleum Development Company
STP	Sao Tome and Principe
VLCC	Very Large Crude Carriers
UBE	Universal Basic Education
UNDP	United Nations Development Program
WCED	World Commission on Environment and Development

SUMMARY

This study closely examined how oil exploration has caused environmental degradation and untold hardship to the local communities in the Niger Delta region of Nigeria. Nigeria is known to be the sixth largest producer of crude oil among the Organization of Petroleum Exporting Countries (OPEC), and the largest in the African continent. The crude oil that puts Nigeria in this position is being produced in the Niger Delta region of the country. Nigeria's economy is based on crude oil exports.

Despite this enormous wealth coming from the Niger Delta, there is pervasive poverty and despicable environmental damage as a result of crude oil mining activities going on in this region. Suffice it to say that, there is total neglect of the region in terms of infrastructural development and economic empowerment of its local populace by the government and oil companies operating in the region. This has led to youth restiveness and hostage taking in the area.

A sound methodological research approach was developed and utilized in this study. Both primary and secondary data were collected from questionnaires, structured interviews, personal observations, relevant literature, documentation from government agencies and oil companies. These data were analyzed, and they synthesized the discussions contained in this study.

This study is all about charting a new course in the way the oil companies operating in the Niger Delta region carry out their activities in order to ensure the environmental sustainability of the region, and improve the economy of the rural communities in the region at the same time. It identifies the constraints to effective implementation of Nigeria's environmental laws and policies especially the Environmental Impact Assessment (EIA) as it concerns oil prospecting, which has hitherto contributed in hindering her environmental sustainability. It also unveils the critical issues concerning the deplorable state of the economy of the local populace of the region.

After identifying the various problems contributing to the environmental woes, and the poor economic growth of the region, this research proffers recommendations that should be conscientiously and vigorously implemented to reverse the trend. Although, the oil companies have made some efforts towards providing the necessary infrastructures

needed in the region, they need to do more in the area of capacity building, and use of green technologies to ensure healthy environment of their host communities. The government on her part should strengthen the various Ministries and Agencies vested with the responsibility of protecting the Nigerian environment, by providing them with the necessary incentives for maximum efficiency. This study therefore emphasizes a concerted approach from all the stakeholders in the Niger Delta region for the successful implementation of the recommendations herein to ensure the sustainable development of the region, and Nigeria in general.

ZUSAMMENFASSUNG

Mit dieser Studie wird im Einzelnen überprüft, wie die Erdölförderung im Niger Delta Gebiet von Nigeria Umweltschäden verursacht und den Bewohnern Elend bereitet. Nigeria ist das sechsgrößte Ölförderland der OPEC und das größte in Afrika. Der Großteil der nigerianischen Ölreserven liegt im Niger Delta, die Wirtschaft Nigerias ist stark abhängig vom Verkauf von Erdöl.

Trotz dieses enormen Reichtums aus dem Niger Delta herrschen Armut und Umweltschäden vor, verursacht durch die Art und Weise der Erdölförderung in diesem Gebiet. Es reicht wohl zu sagen, dass die Bewohner der Region in Bezug auf infrastrukturelle Entwicklung und Verleihung ökonomischer Macht von Regierung und Ölindustrie völlig vernachlässigt werden. Dies hat zu Unruhen unter den Jugendlichen und Geiselnahmen geführt.

Eine gründliche Forschungsmethode wurde für diese Studie eingesetzt. Sowohl direkte als auch indirekte Daten wurden mittels Fragebogen, gegliederter Interviews, Beobachtungen vor Ort, sachdienlichen Informationsmaterialien und Dokumentationen von der Regierung und Ölindustrien erhoben. Diese Daten wurden sodann analysiert und deren Diskussion in dieser Studie zusammengefasst.

In dieser Studie wird eine neue Vorgehensweise bezüglich Erdölförderung im Niger Delta Gebiet gefordert, wonach die Ölindustrie ihren Aktivitäten ohne der Umwelt zu schaden nachgehen soll und gleichzeitig die wirtschaftliche Lage der Region verbessert werden soll. Die Studie hat die Faktoren festgestellt, die bisher die wirkungsvolle Durchsetzung nigerianischer Umweltgesetze, vor allem das ‚Environmental Impact Assessment‘ (EIA), verhindert haben. Offenbart wird auch die Armut, die unter den Bewohnern verbreitet ist.

Diese Forschung bringt auch Empfehlungen, die gründlich und nachdrücklich umgesetzt werden sollen, um dem bisherigen Trend entgegenzuwirken. Die Ölindustrien haben sich zwar bemüht, um die notwendigen Infrastrukturen in der Region zur Verfügung zu stellen, aber sie sollten in Bezug auf Aufbau und Verwendung grüner Technologien mehr tun, um eine gesunde Umwelt dieser Region zu ermöglichen. Außerdem soll die

Regierung ihre Behörden und Ministerien, die für den Schutz nigerianischer Umwelt zuständig sind, verstärken und den notwendigen Anreiz geben, damit sie mit maximaler Effizienz ihre Arbeit leisten können. Die Studie betont daher, dass alle Beteiligten im Niger Delta zusammenarbeiten sollen, um die dort genannten Empfehlungen erfolgreich durchsetzen zu können und anschließend eine dauerhafte Entwicklung der Region und Nigeria zu ermöglichen.

Chapter One

The Framework of the Study

This Chapter deals with the general framework of the study. It gives an insight into the main motivation/statement of the problem for this study, the research objectives, the study expectations, the methodological approaches employed and then the problems encountered during the data collection. This chapter also contains the outline of the study and a general literature review of some other related studies carried out on oil-related issues in the Niger Delta region.

1.0 Statement of the Problem

This study has become very imperative due to the environmental degradation occasioned by hydrocarbon production in the Niger Delta area of Nigeria. There has been series of conflicts between the indigenous people of the region and the major Oil Companies operating therein over the years. The region claims that the activities of the Oil Companies instead of improving have impoverished its people by causing a serious decline in their marine and agricultural resources, which constitute their economic main stay.

Because of environmental pollution, there is drastic decline in the region's biodiversity and ecological resources, which are the main sources of their income and the people's mode of survival (Ashton et al., 1999). Also, there is an aspect of the health hazards posed to the inhabitants as a result of oil pollution of the environment, and hence there are environmental challenges as well as socio- economic problems created by adverse effects of oil mining, which has culminated into low agricultural productivity and poor farm yields sufficient enough to threaten the food security of the Niger Delta (Ashton et al., 1999).

This study intends to investigate fully the effects of hydrocarbon exploitation on - the environment of the Niger Delta region; on the general well being of the local communities in the region; and on the economic growth of the indigenous people of the Niger Delta over the years. It would then recommend ways of improvement that can lead to environmental sustainability and subsequent sustainable development of the region.

1.1 Aims and Objectives of this Research

The sole objective of this study is to discover laudable ways of achieving overall sustainable development of the Niger Delta region. This would mean achieving environmental sustainability, economic sustainability and social equity which are the three pillars of sustainable development.

The main objectives of the study are to:

- Assess the present environmental state of Nigeria and that of the Niger Delta region;
- Identify principles of environmental sustainability applicable to the Niger Delta region;
- Elaborate these principles in scientific, technological and socio-economic terms;
- Consider current and future priorities for environmental sustainability in the region;
- Assess existing political, socio-economic, ethical, cultural and legal frameworks for environmental decision making in Nigeria;
- Assess Nigeria progress in environmental sustainability and the attainment of the MDGs target of 2015;
- Assess the various action plans for the sustainable development of the region by governments and their levels of implementation.

1.2 Study Expectations

It is hoped that this study on completion would provide a ready guide to policy makers and other stakeholders in the Niger Delta region to make informed decisions in relation to implementing action plans geared towards the sustainable development of the region.

It would also help in updating existing policies and interventions aimed at empowering the local communities of the region economically.

The study would recommend strategies that could be adopted by the decision-makers and stakeholders in mitigating pollution of water bodies and agricultural lands, which contribute immensely to the economic well-being of the local people.

1.3 Methodological Approach Used in the Study

The significance of this research lies in the different approaches adopted in the investigation of environmental sustainability in the Niger Delta region, with particular reference to the effects of hydrocarbon pollution on the economy of the local communities. The following methods were adopted in this study: literature review, surveys and field observations.

Literature Review

Relevant literature reports from Journals, textbooks, relevant government agencies (Niger Delta Development Commission, Federal Ministry of Environment, State Ministries of Environment), documents from the Health Safety and Environment Departments of Oil Companies operating in the Niger Delta region, reports from Non-governmental and community based organizations, Newspaper reports and internet websites were reviewed and used in this research. There are many literatures dealing with the issue of oil exploration and environmental pollution in the Niger Delta region of Nigeria. However, most of the literatures published have focused on the issues from social, economic, equity, minority and human right issues. Some of the available literatures dealt with the political and resource control issues in the region. Dr. Kaniye Ebeku wrote one of the most recent literatures that talked about the indigenous people of the Niger Delta and oil exploration in the context of International Law. His book brought the issues of equity, resource rights, and rights of the indigenous people and the underdevelopment of the Niger Delta region to international discourse. The information from the above sources accounts for the secondary data employed in this research.

Surveys

The surveys employed in this study were in the forms of questionnaires, interviews and field observations which form the primary sources of information for this work. The questionnaire was prepared in collaboration with Frau Andrea Tönjes from the Chair of Environmental Issues in the Social Sciences, Brandenburg Technical University Cottbus, Germany (BTU). The questionnaire, which has both closed and open-ended questions covered all aspects of the research (see Appendix), and was divided into four parts, which include:

- i) Demographic data
- ii) The local economy

- iii) Environmental Sustainability, and
- iv) Developmental activities

Before the questionnaires were finally distributed, a pre-test was carried out amongst some BTU students, and final adjustments were made on the questionnaires. This pre-test was to ensure the reliability, validity and correctness of the questions contained in the questionnaires.

The Niger Delta region is made up of several communities, but for the purpose of this research, only five communities were selected. These five communities were chosen on the strength that the major Oil Companies operating in Nigeria have their major operations in these communities. These chosen communities feel the major impacts of oil explorations (both positive and negative) in the Niger Delta region more than others.

A total of 250 questionnaires were randomly distributed to respondents who reside in these communities. The questionnaires were self-administered, to make sure that the study cut across the different age groups. Out of the number that was distributed, 215 completed questionnaires were returned representing 86 per cent of the total number distributed (see Appendix for a sample of the questionnaire).

Interviews

Interviews formed part of the methods used in gathering data for this study as mentioned earlier. Structured interviews were used to gain an in-depth knowledge from some management staff of some Oil Companies operating in the Niger Delta region, on issues of environmental sustainability, infrastructural development and economic well-being of the region. Their answers to the interview questions were used as a check to the feedback from the communities through the questionnaires administered and vice versa (see appendix for the structured interview questions).

Field Observations

In the course of distributing the questionnaires to the various communities, I was able to see for myself some of the devastations caused by oil operations in these communities. One could easily notice the gas flare pits, oil films on the river waters, some dead mangrove trees, and what used to be farmlands covered by crude oil patches. Some of the communities have the crude oil and refined petroleum products pipelines passing through

them shown on the surface. All these observations were recorded in form of photographs for this study.

1.4 Problems Encountered during Data Collection

Some parts of the Niger Delta region where the questionnaires were distributed have very bad terrain, for easy access into these areas the local boats were used as the only means of transportation. Having access to the Chiefs and Heads of the local communities also posed a great challenge; this was due to the tight schedules of most of them and the financial implications.

While official data sources exist in Nigeria, the bureaucratic bottlenecks involved in having access to them is enormous. To be able to have access to Oil Company information, one need to get an official written permission from the Department of Petroleum Resources (DPR), this is the official government agency that regulates the activities of the Oil Companies. Another problem encountered during the data collection was confusing discrepancies between the various sources, to the extent that official databases are rendered unusable by structural inconsistencies and systematic compilation errors that threaten data reliability and validity. The author encountered the above problems in the course of this study. These problems were subsequently overcome and did not have any adverse effect on the reliability of the data used in this study.

1.5 The Outline of the Dissertation

This present study will try to cover the areas that were neglected by previous studies especially the aspects of environmental degradation caused by oil operations in the Niger Delta region, its environmental sustainability, sustainable development and the impact of oil exploitation on the economy of the indigenous (local) people.

This study is arranged into Nine Chapters. Chapter one contains the framework of the study - describes the statement of the problems, aims and objectives of the study, the study expectations, the methodological approaches employed in the study, and the general literature review. Chapter Two gives a brief description of the country called Nigeria in which the study area – the Niger Delta region is situated, it also contains the description of the demography of the study area (The Niger Delta region). Chapter three treated issues concerning Environmental Sustainability and Sustainable Development in the Niger Delta and Nigeria as a whole - some economic reform strategies designed by

the Nigerian government to eradicate poverty in the region were also discussed in this chapter. Chapter Four looks at the environmental degradation of the study area – oil spillage and gas flaring, while Chapter Five dealt with the local economy of the Niger Delta region and its economic sustainability potentials.

Chapter Six describes the developmental activities and social services available in the Niger Delta region. Chapter Seven dealt with the issues of environmental regulation and enforcement aimed at achieving environmental sustainability in Nigeria – Environmental Impact Assessment Practice in Nigeria. Chapter Eight discussed Environmental Policy issues in Nigeria - Environmental Standards, Compliance and Monitoring, while the Recommendations and conclusions of this work were presented in Chapter Nine.

1.6 General Literature Review

As it is known, Nigeria is the sixth largest oil producing country within the Organisation of Petroleum Exporting Countries (OPEC) and the seventh largest oil producing country in the world. Hence, the global importance of Nigeria's oil cannot be over-emphasised. Apart from its global importance, oil revenue is the main source of Nigeria's annual foreign exchange earnings and contributes about 95 per cent of the country's annual revenue.

It is a well-known fact that Nigeria's oil deposits are naturally located in the Niger Delta region of the country inhabited by indigenous people. Oil exploitation in Nigeria started over 50 years ago. Constitutional and statutory provisions vest the ownership of oil in the Nigerian State. Moreover, by the Land Use Act of 1979, the ownership of all land comprised in the territory of a state of the federation is vested in the state in trust for all Nigerians. In essence, by the Land Use Act all the lands in Nigeria have been nationalised. The Niger Delta indigenous people allege that by a combination of these and other legal provisions they are excluded from participation in the exploitation of oil found in their region, notwithstanding adverse environmental and socio-economic impacts of oil operations (Ebeku, 2005).

There are enormous literatures on Nigerian oil, oil operations in Nigeria's Niger Delta and Nigerian oil industry. This is due to the strategic importance of oil in the Nigerian economy as well as the importance of oil in world politics. Most of the literatures published centred around environmental and human right issues as it is related to oil

exploitation in Nigeria and socio-economic problems of oil exploitation. For the purpose of this study, some of these literatures are reviewed herewith.

The first major book published on Nigerian oil was in 1969 by Schatzl. It was published 13 years after the discovery of oil in Nigeria (Oil was discovered in Nigeria in 1956). The book focused essentially on the economic exploitation of oil and gas in Nigeria by the multinational oil companies especially Shell-BP Development Company of Nigeria Limited. The book highlighted the importance of oil in the Nigerian economy and its importance as a major source of energy in Nigeria. This book did not discuss the environmental and social impacts of oil operations on the indigenous people of the Niger Delta.

In 1970, Scott Pearson wrote a book titled '*Petroleum and the Nigerian Economy*'. The central concern of this book was on the impact of oil on the Nigeria economy, just like Schatzl's book. This book is merely on the economic analysis of the role of oil in the Nigerian economy. It also discussed the politics of oil in Nigeria. It did not make any mention of the environmental pollution associated with oil production, and the economic empowerment of the Niger Delta communities.

In 1996, Deborah Robinson took the socio-anthropological approach and studied the impact of oil on the Ogoni community of the Niger Delta. The study was a case study of the social and political impacts of oil production on the community. The study pointed out that gas flaring because of the oil operations adversely affected the community's environment, but environmental issues were not central in her study.

Then in 1990, Ikein studied the impact of oil on a developing country, with special emphasis on Nigeria. His work adopted a socio-economic and anthropological approach, but it was not exclusively devoted to the study of oil operations in the Niger Delta rather, on the impact of extractive economies around the world. With specific regard to the Niger Delta, the author was concerned with the social and economic impacts of oil on the region and its local populations. The author only made a passing reference on environmental issues arising from oil exploitation in the Niger Delta.

Ebeku (2005) and Etikerentse (1985), wrote on ‘oil and the Niger Delta People in International Law’ and the ‘Nigerian Petroleum (Oil) industry’ respectively from a legal perspective. Ebeku’s book was very passionate about the total neglect of the Niger Delta by the Nigerian State in terms of infrastructural development and inequity in the distribution of the oil wealth that is coming from the region. In his book, he pointed out the main causes of the youth unrest and militia actions in the Niger Delta as inequality in oil wealth distribution, environmental degradation and human right abuses, and then pointed out how the Oil Companies and the International Community can come in as to help in the sustainable development of the region.

Nevertheless, in 1998, Okorodudu-Fabara wrote a book that centred on environmental issues in Nigeria, including oil-related environmental problems. However, Okorodudu-Fubara study dealt with the legal study of environmental issues in Nigeria, but it did not mention environmental issues concerning the Niger Delta region. The main thrust of the study was the treatment of legal measures for the protection of the three environmental media, viz.: air, land and water.

This present study would contribute extensively in the area of environmental sustainability and eventual sustainable development of the Niger Delta region and Nigeria in general.

Chapter Two

A Brief Description of Nigeria and Demography of the Study Area (Niger Delta Region)

The Nigerian state has been known to be the most populous Black Country in the African continent and indeed the world. The country is endowed with abundant human and natural resources. It is the fifth largest exporter of crude oil to the United States of America, and the sixth largest producer of crude oil among the OPEC countries. About 95 per cent of Nigeria's economy is dependent on the oil exports. Despite this enormous wealth nature has endowed in the country, poverty is still endemic, and majority of the population still live on less than one dollar per day according to World Bank report. The woes of Nigeria started with the Military rule for over three decades, before the attainment of democracy in the country in 1999. This introductory Chapter will give some brief facts about the Nigerian state, its economy and the advent of oil exploration in Nigeria.

2.0 A Brief Overview about the Federal Republic of Nigeria

Nigerian climatic conditions vary. It is tropical in the center, equatorial in the South and arid in the North. It lies between 4°N and 14°N, and between 3°E and 15°E in Western Africa. Nigeria is bordered to the North by the Republics of Niger and Chad, to the West by the Republic of Benin, to the East by the Republic of Cameroon and to the South by the Atlantic Ocean (Dublin Green *et al*, 1999). Nigeria occupies a total area of 923,768 km² (comprising mainly of 910,768 km² land and 13,000km²water). Figure (1) below is the geographical map of Nigeria. Nigeria has a total population of 140 million people according to the 2006 Census figure (NPC, 2006). The principal mineral resources of Nigeria include fossil fuels (petroleum, natural gas, coal, and lignite), metallic minerals (tin, columbite, iron, lead, zinc, gold), radioactive minerals (uranium, monazite, and zircon), and non-metallic minerals (limestone, marble, gravel, clay, shale, feldspar, etc.) and arable land.



Figure 1: Geographic Map of Nigeria. (Source Pearson Education, Inc.)

Table 1: Physical and Socio-economic Characteristics of Nigeria

Characteristics	2007
Location	West African Sub region
Total Area	923,768 Km ²
Land Area	910,768 Km ²
Population Estimate from (2006 Census)	140 Million
Population growth rate	2.4
Languages	English (official), Hausa, Yoruba, Ibo, Fulani, and more than 200 others
Adult Literacy (%)	68 (2003 est.)
Life Expectancy at Birth (Years)	52.0
Share of Agriculture (%)	37.19
Share of Industry (%)	20.07
Petroleum (%)	12.58
Mining and Quarrying (%)	0.30
Manufacturing (%)	7.18
Services (%)	41.75
GDP Per Capita Income (US\$)	47.70
GDP/PPP (in million US\$) (2005 est.)	\$132.9 billion; per capita \$1,000
GDP Growth Rate (%)	5.6
Human Development Index	0.402

2.1 Economic Overview

Oil-rich Nigeria, long hobbled by political instability, corruption, inadequate infrastructure, and poor macroeconomic management, is undertaking some reforms under a new reform-minded administration. Nigeria's former military rulers failed to diversify the economy away from its overdependence on the capital-intensive oil sector, which provides 20% of GDP, 95% of foreign exchange earnings, and about 65% of budgetary revenues.

The largely subsistence agricultural sector has failed to keep up with rapid population growth - Nigeria is Africa's most populous country - and the country, once a large net exporter of food, now imports food. Following the signing of an IMF stand-by agreement in August 2000, Nigeria received a debt-restructuring deal from the Paris Club and a \$1 billion credit from the IMF, both contingent upon economic reforms.

Nigeria pulled out of its IMF program in April 2002, after failing to meet spending and exchange rate targets, making it ineligible for additional debt forgiveness from the Paris Club. In the last year, the government has begun showing the political will to implement the market-oriented reforms urged by the IMF, such as to modernize the banking system, to curb inflation by blocking excessive wage demands, and to resolve regional disputes over the distribution of earnings from the oil industry (Nigeria Country Analysis Brief, 2005).

In 2003, the government began deregulating fuel prices, announced the privatization of the country's four oil refineries, and instituted the National Economic Empowerment Development Strategy, a domestically designed and run program modeled on the IMF's Poverty Reduction and Growth Facility for fiscal and monetary management (Nigeria Country Analysis Brief, 2005).

In November 2005, Abuja won Paris Club approval for a debt-relief deal that eliminated \$18 billion of debt in exchange for \$12 billion in payments - a total package worth \$30 billion of Nigeria's total \$37 billion external debt. The deal requires Nigeria to be subject to stringent IMF reviews. GDP rose strongly in 2006, based largely on increased oil exports and high global crude prices (Federal Ministry of Finance, 2006).

2.2 The Discovery of Oil in Nigeria

The search for oil in Nigeria started sometime in 1908 by a German-owned company called Nigerian Bitumen Company, they explored a certain location in the south-western area of present day Nigeria (Ajomo, 1987)¹. The attempt was not successful and the company was forced to abandon further search in 1914 following the outbreak of the First World War. The German company did not return after the hostilities of the First World War. In 1914 the British colonial administration believing that oil might be found in

¹ Historical Perspectives of Oil Exploration in Nigeria.

Nigeria, promulgated the Mineral Oils Ordinance of 1914 to 'regulate oil exploration and exploitation in the country'. Section 3 of this Ordinance provided: 'It shall not be lawful for any person to search or drill for or work mineral oils within or under any lands in Nigeria except under a license or lease granted by the minister under this Ordinance' (Laws of the Federation of Nigeria, 1958).

The 1914 Ordinance contained a discriminatory provision, probably designed to exclude enemy countries and their nationals from doing business in a British territory, which provided as follows: "No lease or license shall be granted except to a British subject or to a British company registered in Great Britain or in a British colony, and having its principal place of business within Her Majesty's dominions, the chairman and the managing Director (if any) and the majority of the other directors of which are British subjects" (Kassim-Momodu, 1986&87). The resultant effect of the above discriminatory provision was the exclusion of qualified companies, which do not satisfy the provision. This probably explains why it took so long to discover oil in Nigeria judging from the time the first attempt was made.

When the First World War ended in 1918, the search for oil resumed, the Nigerian Bitumen Company (German-owned company) did not return to continue because it could not obtain license under the 1914 Mineral Oils Ordinance as a result of the above discriminatory provision in the Ordinance; rather the search for oil in Nigeria was continued by a new company- Shell D'Arcy, in 1937. According to Ajomo (1987), it was not until 1937 that the search for oil was revived. Shell Oil Company obtained Oil Exploration License (OEL) from the colonial government in that year. Etikerentse (1985), who wrote, shared this view: "Nigeria...being under the territorial control of the United Kingdom, and Germany losing the war, the Nigerian Bitumen Company's activities were not resumed at the end of the war. Instead, a consortium of Royal Dutch and Shell (Dutch and English interests) known as Shell D'Arcy Company emerged and began oil exploration operations in 1937 from its base in Owerri..."

Between 1938 and 1939, Shell D'Arcy made fruitless search for oil Nigeria. It suffered a setback in 1939 with the outbreak of the Second World War. Its operations were interrupted by the war and the company did not resume operations until 1946, a year after the war had ended in 1945 (Etikerentse, 1985). According to sources, vigorous search for

oil yielded result only in 1956, when the company struck oil in commercial quantity at Oloibiri (in present day Bayelsa State – Niger Delta region), later that year another discovery was made at a place called Afam (in present day Rivers State- Niger Delta region also) (Ajomo, 1987). This s rapidly developed and exploited. By 1958, production had reached 5,100 barrels per day and the first shipment of crude oil to Europe was made, thereby making Nigeria one of the oil producing and exporting countries of the world (Pearson, 1970).

Since the first discoveries, further discoveries of oil in commercial quantities have been made in other areas within the Niger Delta region. As of now, oil has not been discovered in any other place in Nigeria outside the Niger Delta (Schatzl, 1969). The implication of this is that the Niger Delta has become a strategic area in Nigeria, as the country is almost entirely dependent on revenue from export of crude oil.

2.2.1 Oil Exploration and Exploitation

Shell British Petroleum (now Royal Dutch Shell) first discovered crude oil in 1956 at Oloibiri, a village in the Niger Delta, and as already mentioned commercial production began in 1958. Today, there are 606 oil fields in the Niger Delta region, out of which 360 are on-shore and 246 are offshore (Nigeria Country Analysis Brief, 2005). Nigeria is at present the largest oil producer in Africa and the sixth largest in the world, averaging 2.7 million barrels per day (bbl/d) in 2006. Nigeria's economy is heavily dependent on earnings from the oil sector, which provides 20% of GDP, 95% of foreign exchange earnings, and about 65% of budgetary revenues (CIA World Fact Book, 2005).

Nigeria's state-held refineries (Port Harcourt 1 and 11, Warri, and Kaduna) have a combined capacity of 438,750 bbl/d, but problems including sabotage, fire, poor management and lack of regular maintenance contribute to low current capacity of around 214,000 bbl/d, according to World Markets Research Center. Plans for several small, independently owned refineries are also being developed with the Nigerian government planning for three new refineries to come on stream by 2008 (Nigeria Country Analysis Brief, 2005).

2.2.2 Oil and Gas Reserves in Nigerian Niger Delta

Oil and Gas Journal (2005) estimates Nigeria's proven oil reserve at 35.2 billion barrels. The Nigerian government plans to expand its proven reserves to 40 billion barrels by 2010 (Nwilo and Badejo 2005). In February 2005, Nigeria announced the award of five oil blocks in the Joint Development Zone (JDZ), shared by Nigeria and neighbouring Sao Tome and Principe (STP). The JDZ reportedly holds reserves of 11 billion barrels and could potentially yield up to 3 million bbl/d in the next 2-3 years. Development is also occurring in the waters surrounding the JDZ (Nigeria Country Analysis Brief, 2005). Oil and Gas Journal (2005) further stated that Nigeria has an estimated 176 trillion cubic feet (Tcf) of proven natural gas reserves in 2005, giving the country one of the top ten natural gas endowments in the world and the largest endowment in Africa (see figure 2 below).

The question has been, how sustainable are the mining of these natural resources in the Niger Delta region? This study recommends that the exploitation of these resources be carried out sustainably in such a manner that the environment is well protected by using clean technologies, with net economic gains by the oil companies, and the local communities where these activities take place get better treatment by way of human and infrastructural development opportunities.

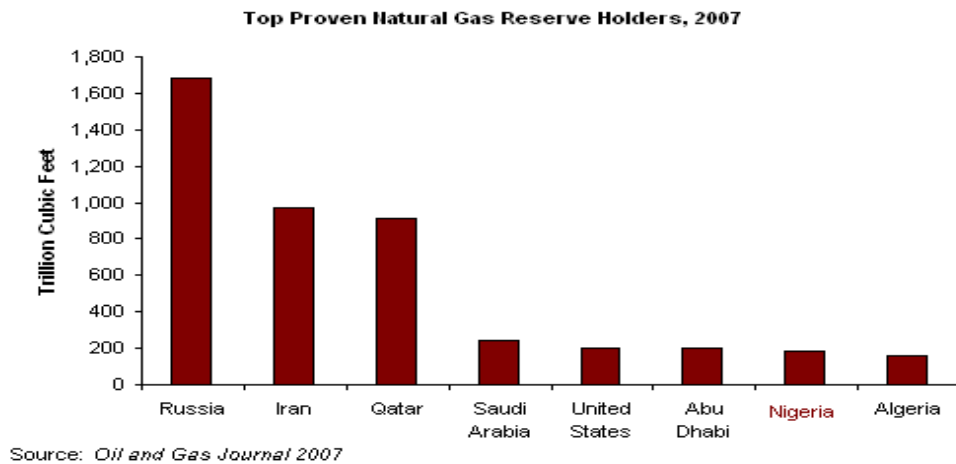


Figure 2: Natural Gas Reserve Compared to Other Countries

2.2.3 Recent Developments in the Oil Industry in Nigeria

Since December 2005, Nigeria has experienced increased pipeline vandalism, kidnappings, and militant takeover of oil facilities in the Niger Delta. As of April 2007, an estimated 587,000 bbl/d of crude production was shut-in (could not be produced due

to the problems mentioned above) according to NNPC (2007). The majority of shut-in production is located onshore in the Niger Delta, with the exception of the offshore 115,000 bbl/d EA Platform. Since December 2005, Nigeria has lost an estimated 16 billion dollars in export revenues due to shut-in oil production. Shell has incurred the majority of shut-in oil production (477,000 bbl/d), followed by Chevron (70,000 bbl/d) and Agip (40,000 bbl/d).

Militant attacks on oil infrastructure have also crippled Nigeria's domestic refining capabilities. In February 2006, militant attacks in the western delta region forced the Warri (125,000 bbl/d) and Kaduna (110,000 bbl/d) refineries to shutdown due to a lack of feed stocks (NNPC, 2007). In December 2006, operators shutdown Nigeria's two Port Harcourt refineries for two months due to technical problems. The Niger Delta rebel group, Movement for the Emancipation of the Niger Delta (MEND) and other militia organizations in search of monetary compensation and/or political leverage are the ones behind the attacks.

In addition to abductions, thousands of foreign workers and their families have left the Niger Delta due to continued hostilities. At least three companies, including a private drilling company and pipeline laying company have also left. MEND has stipulated numerous conditions to the Nigerian government that it wants met or else it has vowed to continue the attacks. Chief among the conditions is greater revenue sharing of the oil wealth, increased local control of oil property, the release of tribal prisoners, and transparency of government budgets.

2.2.4 Production Capacity

Nigeria is the largest oil producer in Africa, the eleventh largest producer of crude oil in the world and a member of the Organization of Petroleum Exporting Countries (OPEC). According to EIA (2007) in 2006, total Nigerian oil production, including lease condensates, natural gas liquids and refinery gain, averaged 2.45 million bbl/d (2.28 million bbl/d was crude oil). If Nigeria could bring back online all oil currently shut-in, EIA estimates that Nigeria could reach crude oil production capacity of three million bbl/d. With the help of new projects coming online, the Nigerian government hopes to increase oil production capacity to four million bbl/d by 2010 (EIA, 2007).

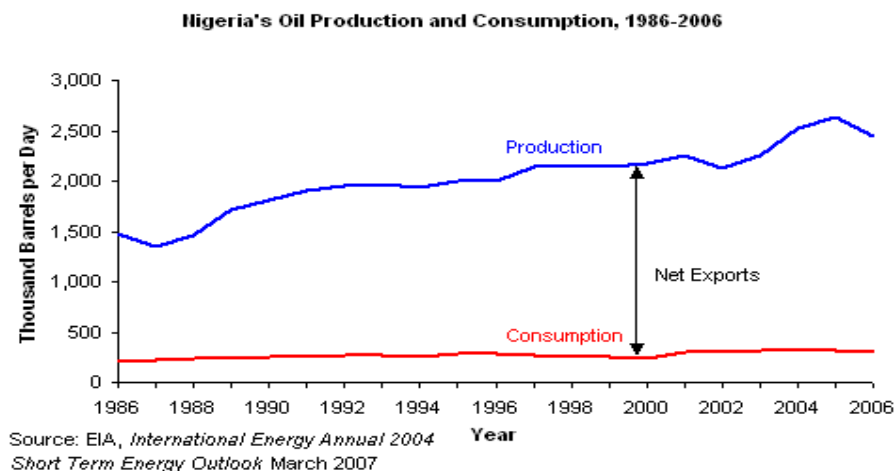


Figure 3: Nigeria's Oil Production and Consumption, 1986-2006

Despite the recent attacks on Shell's oil facilities, the company's deepwater Bonga field began producing oil at the end of 2005, reaching production of 225,000 bbl/d in April 2006 (EIA, 2007). Bonga is estimated to hold recoverable oil reserves of 600 million barrels. Oil from the field is stored in a floating production, storage and offloading (FPSO) unit, with capacity of two million barrels. In August 2008, Shell plans to bring online its Gbaran/Ubie field (220,000 bbl/d), located offshore of the eastern delta (EIA, 2007).

ExxonMobil produces around 750,000 bbl/d of oil in Nigeria. The company plans to invest \$11 billion in the country's oil sector through 2011, with the hope of increasing production to 1.2 million bbl/d (EIA, 2007). In March 2006, ExxonMobil brought online its Erha development, which is located offshore of the western delta. Erha reached peak production of 200,000 bbl/d in July 2006. Oil from Erha is stored in a FPSO, with capacity of 2.2 million barrels of oil. Very Large Crude Carriers (VLCC), capable of holding up to 300,000 deadweight tons are used for exporting the oil from the terminal. ExxonMobil also operates the Yoho field; with current output of around 150,000 bbl/d. Yoho contains around 400 million barrels of oil reserves. Yoho will be re-injected with natural gas to maintain field pressure. The \$1.2 billion field is located in the shallow waters of the eastern delta. In June 2008, ExxonMobil plans to bring online its Bosi field (110,000 bbl/d) located offshore of the western delta (EIA, 2007).

Chevron's offshore Agbami field is scheduled to come online in 2008, with peak production estimated at 250,000 bbl/d. The majority of Agbami lies in Block 127, while

one-third of it lies in the adjacent Block 128. In February 2005, the Nigerian National Petroleum Corporation (NNPC) awarded Chevron a \$1.1 billion contract for the construction of a FPSO for the field, which will be undertaken by Daewoo Shipping and Maritime Engineering (South Korea). The FPSO is expected to export up to 250,000 bbl/d of oil and 450 million cubic feet per day (MMcf/d) of natural gas (NNPC, 2006).

Total, Agip, and ConocoPhillips are also involved in the Nigerian oil sector. Output at Total's Amenam field reached 120,000 bbl/d in January 2005. The Amenam field contains reserves of around one billion barrels of oil equivalent (NNPC, 2006). In January 2009, Total plans to bring online its offshore Akpo field (180,000 bbl/d) and in January 2010, its offshore Usan field that will produce up to 150,000 bbl/d (EIA, 2007).

2.3 Oil and the Nigerian Economy

Right from the creation of Nigeria in 1914 until the end of colonialism in 1960, and until the end of the first decade after independence, Nigerian economy was agro-based. Agriculture was the mainstay of the economy. Robinson (1996) wrote that 'during the colonial period (1914-1959), Nigeria was exploited for its agricultural products'. The main agricultural products were cocoa (produced in the West), groundnut and cotton (produced in the North, and palm oil (produced in the East, which includes the Niger Delta region). However, oil exploration began in Nigeria in 1956, but it did not play any significant role in the Nigerian economy until the early 1970s (Robinson, 1996). According to Robinson, 'in the early 1960s, revenue from oil accounted for less than 10 per cent of Nigeria's revenue base'. For example, in 1963 and 1964 oil revenue was only 4.1 per cent and 5.9 per cent respectively, of the total revenue of the country (Graf, 1988 and Robinson, 1996). So on the contrary, the bulk of the country's revenue during this period was from agriculture (Iwaloye and Ibeanu, 1997), and more than 70 per cent of the people employed in this sector (Robinson, 1996).

However, from the early 1970s, the yield of oil began to increase and the dominance of agriculture in the country's economy began to decline. Figure 4 and Table 2 below show the statistical records of the importance of oil revenue as a percentage of the total revenue of Nigeria from 1970 to 1985.

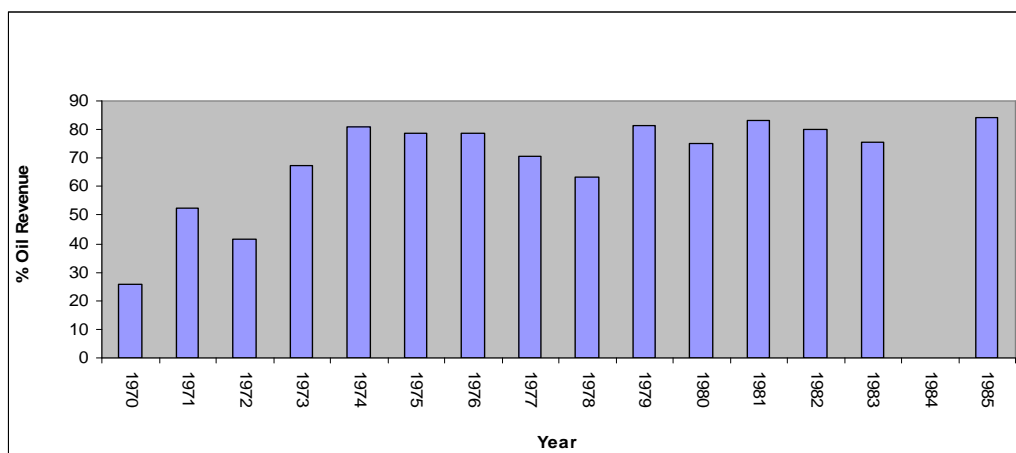


Figure 4: Oil Revenue as Percentage of Total Revenue from 1970 - 1985

Table 2: Contribution of Oil to the Federal Government Revenue, 1970-1985

Year	Oil Revenue as % of total revenue
1970	25.9%
1971	52.5%
1972	41.5%
1973	67.3%
1974	80.8%
1975	78.7%
1976	78.5%
1977	70.6%
1978	63.1%
1979	81.4%
1980	75.1%
1981	83.3%
1982	80.0%
1983	75.6%
1984	N/A
1985	84.0%

Source: Graf (1988)

Table 2 above shows the overbearing importance of oil in the Nigerian economy especially from 1973 (Graf, 1988). As a further demonstration of this importance, there is evidence to indicate that crude oil sales income as a percentage of foreign-exchange earnings escalated from 2.5 per cent of all such revenue to 58.1 per cent in 1970, to 93.6

per cent in 1975, and to 98 per cent and more through the first half of the 1980s (Graf, 1988). This trend has continued ever since. For instance, in 1997 oil revenue constituted 88 per cent of the federal government's foreign exchange earnings as shown in 1998 Budget, and 83.5 per cent of the total gross revenue for the year 2000, which shows that Nigeria earned N1.59 trillion from oil (The Guardian, 5 July 2001).

It was reported by the Central Bank of Nigeria that: *“The Nigerian government earned N 209.2 billion (1.3 billion Euros) in excess oil revenue between January and May 2004... the Central Bank further announced that the country's economy had grown at a record rate of 10.2 per cent in 2003. Growth is mostly driven by the oil sector and record of oil prices is producing more excess revenue... The Central Bank Governor was also optimistic about further growth in the future”*.

From the above analysis, it can be concluded that the Nigerian economy is based on oil. The question now is whether the federal government has plans to mitigate the huge environmental, ecological and social impacts caused by oil exploration and exploitation in the Niger Delta region, and whether this huge revenue accruing from oil is being utilized to better the living conditions of the inhabitants of this region.

This research is therefore aimed at reviewing the existing environmental management policies established by the relevant authorities for the Delta region (if any), and making recommendations for the establishment of a sustainable environmental management plan that could aid in the sustainable development of the region.

2.4 An Assessment of the Present State of the Nigerian Environment

For a country or a region to become environmentally sustainable, it means that all the parameters that confer environmental sustainability must have been adequately taken care of. It also means that such country or region would witness: less poverty among its citizens, food security, less conflict, use of clean technology in the industrial sector etc.

In general, the environment provides all life support systems in the air, on water and on land as well as the materials for fulfilling all developmental aspirations. However, the Nigerian environment today presents a gloomy picture across the length and breadth of the country. Environmental problems manifest in the following forms: Sheet erosion is a phenomenon whereby a large area of soil surface is lost by almost even ‘blank sheet’

flows of surface or near surface water. Sheet erosion occurs nation-wide, but it is least perceived because of its “deceitful” slow progress. Sheet erosion slowly removes the soil surface layers by rainfall runoff down slopes, producing a devastating effect on agriculture.

Gully erosion, in contrast to sheet erosion, is obvious because of its disastrous nature and rapid progress. It is particularly severe in Abia, Imo, Anambra, Enugu, Ondo, Edo, Ebonyi, Kogi, Adamawa, Delta, Jigawa and Gombe States. Anambra and Enugu States alone have over 500 active gully complexes, with some extending over 100 meters long, 20 meters wide and 15 meters deep (Nigeria Country Analysis Brief, 2005). Coastal and marine erosion and land subsidence occur particularly in the coastal areas of Ogun, Ondo, Delta, Rivers, Bayelsa, Akwa Ibom and Cross River States. The most celebrated case of the effects of coastal erosion is the over-flow of the Bar Beach in Lagos by the surging waves of the Atlantic Ocean now a regular feature since 1990, threatening the prime property areas of Lagos.

Flooding occurs throughout Nigeria in three main forms; coastal flooding, river flooding and urban flooding. Coastal flooding occurs in the low-lying belt of mangrove and fresh water swamps along the coast. River flooding occurs in the flood plains of the larger rivers, while sudden, short-lived flash floods are associated with rivers in the inland areas where sudden heavy rains can change them into destructive torrents within a short period (FMEV, 2006).

Urban flooding in towns located on flat or low-lying terrain especially where little or no provision has been made for surface drainage, or where existing drainage has been blocked with municipal waste, refuse and eroded soil sediments. Extensive urban flooding is characteristic of the annual rainy season in Lagos, Maiduguri, Aba, Warri, Benin and Ibadan (FMEV, 2006).

Drought and Desertification remain very serious ecological and environmental problems, affecting about 15 states in the northern-most part of the country. Currently, it renders the areas north of latitude 15° either desertified or highly prone to desertification. The persistence of the problem continues to cripple the socio-economic life of the areas.

Climatic Change/Ozone layer depletion

According to FMEV (2006), Nigeria also has had to contend with global environmental issues such as climatic change and ozone layer depletion. Climatic change or global warming is due to the increasing concentrations of atmospheric warming gases or green house gases (GHG), especially carbon dioxide (CO₂), whose concentrations have increased from 280 parts per million (PPM) in the 1800s to about 370 PPM now. Majority of these gases are coming from the oil production in the Niger Delta region, through gas flaring.

Oil Pollution in the Niger Delta Region

Pollution from oil spills, oil well blowouts, oil blast discharges and improper disposal of drilling mud from petroleum prospecting have resulted in problems such as:

The loss of the aesthetic values of natural beaches due to unsightly oil slicks;

Damage to marine wildlife, modification of the ecosystem through species elimination and the delay in biota (fauna and flora) succession; and

Decrease in fishery resources.

Urban Decay and Squatter Settlements

There is excessive pressure on available urban resources, infrastructure and space evident in cities such as Lagos, Port Harcourt, Ibadan, Umuahia, Kano, Kaduna, and Maiduguri and, of recent, Abuja and its satellite towns.

Industrial Pollution and Waste Disposal

Industrial pollution from the over 5,000 industrial facilities and perhaps another 10,000 small-scale industries, some operating illegally within residential premises, is a growing problem in Nigeria (FMEV, 2006). In places like Kano, Kaduna, Port Harcourt, Warri and Lagos, coloured, hot and heavy metal-laden effluent especially that from the textile, tannery, petrochemicals and paint industries, is discharged directly into open drainages and channels constituting severe dangers to water users downstream. Also disturbing is the practice where some industrial facilities bury their expired chemicals and hazardous waste in their backyards, threatening the water quality of innocent neighbors who rely on their dugout wells for drinking water (FMEV, 2006).

Municipal Solid Waste Disposal

Municipal solid waste heaps dot several parts of Nigerian major cities, blocking motorways and making passages along alleys and pavements difficult. Municipal waste disposal and sewage problems are particularly serious in all urban centers. Specifically, the following characterize the major urban centers: various non-biodegradable household petrochemical products such as polythene bags, plastic containers, Styrofoam packages and tyres which litter Nigerian cities; and about 80 million liters of crankcase oil disposed from mechanic workshops, industries, power stations and commercial houses, discharged carelessly into drains and ground surfaces in the cities.

Loss of Fauna and Flora

Nigeria's wildlife is rapidly disappearing due to various environmental malpractices. Animals that have disappeared from Nigeria in recent times include the cheetah, the pygmy hippopotamus, the giraffe, the black rhinoceros and the giant eland (Powell, 1993). He further estimated that 484 plant species in 112 families, including many medicinal and fruit trees, are also threatened with extinction because of habitat destruction and deforestation.

Causes of Nigeria's Environmental Problems

There are several factors responsible for the several environmental problems in Nigeria according to UNDP Nigeria, (2006). These are:

- the general inability of the agencies responsible for the environment to enforce laws and regulations, particularly with respect to urban planning and development, prospecting for minerals and adherence to industrial standards, siting of public buildings and residential quarters in flood-prone areas, unsettled dump sites improperly reclaimed and converted to plots for erection of residential quarters, public buildings and market stalls in ecologically sensitive areas;
- inappropriate agricultural practices, the destruction of watersheds, and the opening up of river banks and other critical areas leading to silting of river beds and loss of water courses;
- Uncontrolled logging, accentuated by lack of re-stocking in many parts of the country. This practice carries with it loss of precious biological diversity: nature's raw materials for future development;

- Bush burning for farming and ever-increasing depletion of young forests for fuel wood;
- Gas flaring and the resultant problems of ecosystem destabilization, heat stress, acid rain and the acid precipitation-induced destruction of fresh water fishes and forests in the coastal areas of the country: global estimates indicate that the flaring of petroleum associated gas in Nigeria alone accounts for 28 per cent of total gas flared in the world;
- Mining waste land and mining pits without addressing reclamation as provided for in the Minerals Acts, as in the mine fields of Nasarawa, Jos, Ilesa and Enugu;
- Poverty as a cause and consequence of environmental degradation, with the poor scavenging marginal lands to eke out a living;
- Dumping of non-natural but trade-related expired and contraband chemicals and pesticides; and
- Uncontrolled use of agro-chemicals and the resultant problems of chemical persistence in the soil in humid areas and soil-crust formation in arid climates leading to destruction of vast agricultural lands.

The above accounts represent the present environmental conditions of the Niger Delta region and that of Nigeria as a whole. The environmental sustainability of the country is therefore imperative. The recommendations of this research which are contained in the last chapter of this study present great opportunity to policy-makers and all stakeholders in the Niger Delta to make informed decisions that can turn the environmental woes of the region and country into environmental sustainability.

2.5 Demography of the Study Area (Niger Delta region)

2.5.1 Description of Study Area

The Geography

For practical purposes, the Niger Delta region is defined as comprising the area covered by the natural delta of the Niger River and the areas to the east and west, which also produce oil (ERML 1997). The natural limits of the Niger Delta can be defined by its geology and hydrology. Tamuno (1999) stated that "linguistically, ethnographically, culturally, the Niger Delta of the pre-crude oil and gas era, comprised a bewildering mix of ethnic groups" among which are "the communities of Ijaw (in eastern, western and central Niger Delta), the Ogoni, Itsekiri, Urhobo, Isoko, Ikwerre and Delta Igbo".

Furthermore, Tamuno pointed out that the Niger Delta has a land mass of about 70,000 sq. km. This contrasts with the 1995 World Bank Technical Report, which gives the total land area of the Niger Delta as 20,000 sq. km. "located in south eastern Nigeria" (World Bank, 1995).

An even more restricted concept of the Niger Delta has, unfortunately been espoused by the Niger Delta Environmental Survey (NDES), a non-governmental organization funded by the Oil Producers Trade Sector (OPTS) of the Lagos Chambers of Commerce. The NDES placed the limits of the Niger Delta at Aboh to the north, the Imo River estuary to the east, the Benin River to the west, and down to Akassa and Nun River Estuary to the south.



Figure 5: Map of Niger Delta Region of Nigeria

Franki and Cordry introduced the term "Niger Delta Oil Province" at the 7th World Petroleum Congress in 1967 for the region southward from Onitsha, Benin and Umuahia, where oil and gas occurred in commercial quantities. This is the petroleum definition of the Niger Delta. Nevertheless, it must be emphasized that for development purposes it is the coastal, riverine part of the Niger Delta that is problematic.

The broader Niger Delta region, which includes all oil-producing areas and others considered relevant for reasons of administrative convenience, political expedience and

development objectives, extends the land area to 70,000 square kilometers. Government used this definition during the establishment of the NDDC. Figure 2 above shows the map of Nigeria and the part covered by the Niger Delta region.

However, the recent Niger Delta Development Bill equates the Niger Delta with the South-South geopolitical zone, comprising Edo, Delta, Bayelsa, Rivers, Akwa Ibom and Cross River States, to which neighboring oil-producing parts of Ondo, Abia and Imo States must be added.

The People

The Niger Delta region is extremely heterogeneous with respect to culture and ethnicity (see figure 5 above). The five major linguistic and cultural groups are: the Ijoid, Edoid, Delta Cross, Yoruboid and Igbooid, each is composed of numerous sub-groups. The Ijoid who are said to have the longest settlement history in the Niger Delta, are the most complex linguistically. Each of the numerous clans of this group has some linguistic and cultural distinctiveness. In certain cases, villages in the same clan have linguistic differences. This group, which occupies virtually the whole of Bayelsa state, is also found in Rivers, Akwa Ibom, Delta, Edo and Ondo states.

The Edoid group is made up of mainly, the Edo of Edo state, the Engenni and Apie-Atissa of Bayelsa state, and the Degema of Rivers state. Even within these groups, several sub-groups exist; many claim that they have their own individual identity.

The Delta Cross comprises mainly the Ogoni, Ogba, Abua, Odual and Obolo/Andoni in Rivers state and the Ibibio, Oron and Ibeno of Akwa Ibom state. The Ibibio is the largest of these groups. The most well known, especially internationally, is the Ogoni because of its agitation for resource control and autonomy.

The Yoruboid and the Igbooid are the smallest groups in the Niger Delta despite that they are two of the largest ethnic groups in Nigeria. The main Yoruboid groups are the Itsekiri of Delta state, and the Ilaje and Ikale in the borderlands of Ondo state. The main Igbooid groups are the Ikwere, Ndoni, Egbema, Ogba and Ekpeye in Rivers state and the Ukuwani in Delta state (Niger Delta HD report, 2006).

Education in Niger Delta Region

Education is one of the areas of great concern in a country's quest to achieve sustainable development. The Nigerian nation has not fared well in this direction, and may not achieve this by 2015 which is one of the MDGs. According to the Nigeria Ministry of Education, some of the states in the Niger Delta region are classified as Educationally Less Advantage States (EDLAS) in Nigeria. This means that the region generally has low enrolments in tertiary institutions compared to some other regions in Nigeria. This was due to lack of interest among the youths in acquiring formal education, and the inability of most parents (poverty) to sponsor their wards in tertiary institutions. This trend has changed over the years, due to the presence of the oil companies in the region. Some of these oil companies offer scholarships to the indigenes of the local communities where they operate from secondary to the university levels of education.

There is an increase in Primary school enrolment (gross) rose steadily from 67.7 % in 1990 to 93% in 2001 before rising appreciably to 123.0% in 2003 (Niger Delta HD Report, 2006). This was because of having over aged and under aged children registering for primary education arising from the implementation of Universal Primary Education (UBE) by the Nigerian government. Primary six-completion rate also rose from 60.0% in 1991 to 83% in 2001 before rising appreciably to 94.0 % in 2003. There were however, imbalances in the completion rate between boys and girls in favour of boys. Literacy rate among people within the age group of 15 and 24 declined from 70.7 % in 1991 to 64.1 % in 1999 but later rose significantly to 76.4 % in 2004 (Niger Delta HD Report, 2006). This means that goal two (Achieving Universal Primary Education) of the MDGs is being pursued vigorously by the Nigerian authorities, so as to meet the 2015 target.

From figure 6 below, it can be seen that a greater number of the respondents to the questionnaires distributed during the research have formal education. Majority of them (80) had secondary education, while a significant number (60) had university education. This implies that, the majority of people in the region is well educated and knows their rights, and wants the region to become environmentally sustainable.

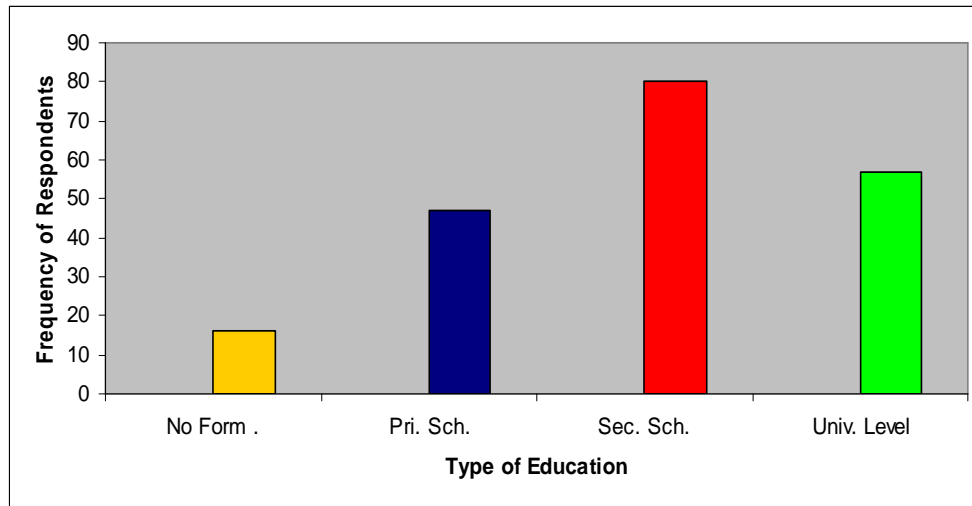


Figure 6: Graph Showing Level of Education of the Local People in the Niger Delta Region.

2.5.2 The Niger Delta Region of Nigeria and its Characteristic Features

The Niger Delta region of Nigeria is among the richest deltas in the world. Other major deltas are either famous for crude oil or natural gas (Amazon in Brazil, Orinoco in Venezuela, Mississippi in the U.S.A., Mahakam in Indonesia) or grow mainly rice (e.g. Indus in Pakistan, Ganges in Bangladesh, Mekong in Vietnam) (Petters, 2007). It constitutes the coastline area of Nigeria; it covers approximately 853km facing the Atlantic Ocean (Dublin Green et al, 1999). The Niger Delta however has huge oil and gas reserves and ranks as the world's sixth largest exporter of crude oil and the second largest producer of palm oil, after Malaysia, which even obtained its palm seedlings from Nigeria.

The Niger Delta is the richest part of Nigeria in terms of natural resources. The area has large oil and gas deposits, as well as extensive forests, good agricultural land and abundant fish resources. Despite the tremendous natural and human resource base, the region's potential for sustainable development remains unfulfilled and its future is being threatened by environmental degradation and deteriorating economic conditions which are not being addressed by present policies and actions (O'Rourke and Connolly, 2003). Fifty years of oil development have not brought significant benefits to the region. Resource-use decisions are being driven by a lack of development, poor healthcare and social facilities, stagnant agricultural productivity, and rapid population growth (Nwankwo and Irrechukwu, 1981).

The Niger Delta is also among the world's major wetlands; with one of the largest mangrove ecosystems. Environmental degradation, arising from total dependence of the rural population on unsustainable agriculture, fishing, forestry and wildlife exploitation, and oil exploration has seriously threatened the Niger Delta. Since pre-colonial days, the Niger Delta has played a crucial role in the Nigerian economy. Its ports and rivers provided access for the British to penetrate the Nigerian hinterland; the gateway for the trade in slaves, and later export commodities such as palm produce, timber, rubber and even groundnut and cotton from the distant northern parts of Nigeria.

Land resource degradation, renewable resource depletion and oil pollution are now the irreversible consequences of prolonged dependence on the natural resources of the region by the indigenous population and the nation. However, conservation must start with human considerations before it can succeed. Environmental conservation and economic development in the Niger Delta depend on the flow of federal funding and goodwill into the region, and on improved understanding of the delta, its petroleum occurrences and its peoples. However, the historical background and human dimensions of the unrest in the Niger Delta have hitherto, not been sufficiently highlighted in the search for lasting peace in the oil producing communities.

Almost all the crude oil produced by Nigeria, which amounts to approximately 2.7 million barrels per day, comes from the Niger Delta region. Despite the crude oil production, the Delta is enormously rich in biological and cultural diversity and has become one of Africa's highest conservation priorities. This same ecosystem feeds and supports nearly seven million people, comprising 14 ethnic groups and over 25 different languages. Most are minorities that historically found safe haven in the delta; they now struggle to maintain their identities and livelihoods as part of its ecosystem.

Decades of dictatorship, a breakdown of civil society, and a near complete lack of attention to environmental concerns have turned the Niger delta into one of the world's most endangered ecosystems; an epicentre of human rights abuses and environmental injustice (Odogwu, 1981). However, since electing a civilian President in 1999 -- its first in nearly two decades -- Nigeria has embarked on a new path of re-constructing civil society, creating new democratic processes, and considering its environmental needs.

There is now opportunity to marshal local, national, and international resources to better conditions in the Niger Delta, which is mostly affected due to crude oil production.

2.6 The Ecological Zones of the Niger Delta

According to Hutchful (1985)², the Niger Delta consists of two distinct ecological zones: tropical rainforest in the northern reaches of the Delta, and to the south a coastal area of mangrove vegetation traversed by many rivers, tributaries and creeks. He stated that the coastal area could be further subdivided into two, namely:

- Salt-water riverine area immediately adjoining the coast where the Niger and its tributaries flow into the sea; and
- A freshwater riverine area, which is further inland.

The World Bank later in their own study identified four different ecological zones³, namely: freshwater swamp forests, mangroves, lowland rainforests, and barrier Island forests. Hutchful's classification appears to be broad-based, while that of the World Bank is specific. Nevertheless, for the purposes of this study, the World Bank's classification would be used because it would be more helpful. Each of the four zones is described briefly below.

Freshwater Swamp Forests

These forests cover 11,700 km of the Niger Delta, and lie within the hinterland away from the mangrove forest. It is located within the flood plains. The freshwater swamp forests are most extensive in the west and central delta; in the eastern delta, the freshwater forest band is much thinner because of higher elevations (World Bank, 1995). The dominant ecological influence in this zone is seasonal flooding; floodwaters collect in countless swamps and ponds, saturating the soil for at least the rainy season (World Bank, 1995). The swamp forest can be sub-divided into two 'ecological groups': a) riverbank levees which are rarely flooded and have been mostly converted to agricultural land (very suitable for tree growth); and b) the back swamps which can be inundated with water for most part of the year. This zone is the most heterogeneous of the main ecological zones, with various species of flora and fauna.

² Hutchful (1985: 114).

³ See World Bank (1995, Volume 1: 24-7)

Mangroves

Nigeria has the third largest mangrove forest in the world and the largest in Africa; the majority of it is found in the Niger Delta (World Bank, 1995). It covers a total area of about 10,240 km (Ebeku, 2005). It is characterized by regular salt-water inundation. According to Ebeku (2005), creeks, which are kept open by tidal action and flooding, flow throughout the forests. Most importantly, the mangrove swamps lie at the centre of a complex and sensitive ecosystem, which is very vital to the fishing industry, and the local economy of the Niger Delta people (see Figure 7 below). The mangrove is the most economically rich among the four main zones and accommodates the most important flora and fauna.

Lowland Rainforests

This zone covers about 7,400 km of the Niger Delta region. However, evidence suggests that very little lowland remains and only a few of the remainder are significant in size or in species diversity (for example, Ebubu forest)⁴. Today most areas in this zone are in swidden agriculture systems, which permit only oil palms and occasional mango trees to remain. For example, Hall (1994) suggests that Ogoniland used to be covered with a rainforest but has been largely converted to degraded bush and farmland. This zone represents the non-riverine or upland areas (coastal plains).



Figure 7: Mangrove in the Niger Delta

Barrier Island Forests

This type of ecological zone (also called beach ridge Island) is the smallest in the delta. They are freshwater forests found between the coastal beaches and the estuarine mangroves. They typically contain a band of rainforest species growing on the inland side

⁴ See World Bank report of 1995.

of the beach ridges and freshwater swamp forests created by the freshwater table. According to Ebeku (2005), the forests are degraded in accessible areas, but large areas of high quality forest with high concentrations of biodiversity remain. An example is the Andoni area, which is still relatively intact. This area is being proposed as a games reserve because of its remnants of elephants and hippopotami.

2.7 Biological Diversity

Biological diversity or biodiversity refers to the number, variety and variability of living organisms. Scientifically, the biodiversity of an area can be assessed from the *genetic, taxonomic, or ecosystem* perspectives. The *genetic diversity* represents the heritable variation within and between populations of organisms⁵. *Taxonomic diversity* is referred to as diversity at the species or higher taxonomic level – the variety of life forms that exist in an area. It can also be referred to as species diversity. *Ecosystem diversity* is the number of habitats or ecological systems within a given geographic area⁶. For the purpose of this research, the biodiversity of the Niger Delta will be assessed from the taxonomic and ecosystem perspectives.

Okiwelu and Anyanwu (2003) defined biodiversity as the variation among living organisms, which encompasses species diversity (the number of different species) genetic diversity (genetic variety within species) and ecosystem diversity (the variety of interactions among living things in natural communities). The term is also used to describe the number, variety and variability of living organisms. For the purpose of this paper, the biodiversity of the Niger Delta will be assessed from the taxonomic and ecosystem perspectives. It is estimated that in Nigeria there are more than 4600 plants species of which about 205 are endemic. Of these, about 484 plants in 112 families are threatened with extinction. Many animals and birds are also threatened with extinction (Salau, 1993). According to another estimate, 25 out of 274 mammals, 10 out of 831 birds, and 2 out of 114 reptiles known to exist in Nigeria are endangered (WRI, 1992).

⁵ Ibid.

⁶ Groombridge (ed) (1992).



Figure 8: Macaws (Birds) Feeding at Riverside Clay Lick

There is abundant data, which indicates that the Niger Delta is greatly endowed with natural resources (both renewable and non-renewable) - the most intriguing of which is crude oil, which as previously seen dominates the Nigerian economy (NDES, 1997). Apart from crude oil, other non-renewable resources of the Niger Delta include natural gas⁷, fossil fuels, and construction materials such as gravel, sand clay, and earth (NDES, 1997). The major renewable resources of the Niger Delta include a network of water resources, a variety of economically important timber species (pole wood, fuel wood etc), edible vegetables, fruits, nuts and seeds, medicinal plants, palm wine and other palm products, and tannins (Ebeku, 2005). Besides, there are bamboos and grasses, which are useful for making a variety of products especially in local cottage industries (Ebeku, 2005).

According to Ebeku (2005), in the Niger Delta region are found the various and extensive forests, which harbor a wide variety of wildlife, including mammals, reptiles, birds, insects and invertebrates (a good number are endemic in the region). The water resources hold a rich variety of aquatic life, including shellfish and crustacean (NDES, 1997). The IUCN ranked the Niger Delta as one of the highest conservation priorities in the entire West African region and noted that it was virtually unprotected, after their assessment of the coastal regions of eleven West African countries (IUCN, 1992). In addition, the World Bank has emphasized the importance of the delta as habitat for a great variety of coastal and estuarine fauna and flora, which lacks any marine or coastal protected area (World Bank, 1995).

⁷ Nigeria has an estimated 176 trillion cubic feet (tcf) of proven natural gas reserves, making the country one of the top ten natural gas endowments in the world and the largest in Africa (Oil & Gas Journal, 2005).

The Niger Delta holds a unique and highly diverse flora and fauna; no area in Nigeria compares with it (Ebeku, 2005). According Ebeku (2005), the Niger Delta region alone holds 60-80 per cent of all Nigerian plant and animal species. In addition, it has been found that Nigeria has 205 endemic species, and the largest number of this are found in the Niger Delta (Ebeku, 2005). According to IUCN, there is evidence that the biodiversity characteristics of the Niger Delta transcend national importance. Being the most extensive and complex lowland forest/aquatic ecosystem in West Africa, the biodiversity of the Niger Delta is of regional and global importance (IUCN, 1992). The faunal and floral compositions of the Niger Delta are briefly described below.

Fauna

As recent works show, the delta contains distinct faunal zones, terrestrial and aquatic, and species new to Nigeria⁸. According to Ebeku (2005), there is an indication that the full range of species in the Niger Delta is still unknown. The World Bank indicates that, the full significance of the delta's biodiversity remains unknown because new ecological zones and species continue to be uncovered and major groups, such as higher plants and birds, remain unstudied in large areas (World Bank, 1995).

Naturally, faunal distribution depends on ecological characteristics. The following species: Mona monkey, speckle-throated Otter, and Marsh Mongoose occur in the mangrove forest of the Niger Delta (Ebeku, 2005). Clawless Otters and new species of genets have been identified. The freshwater swamp forest harbors the black squirrel and antelopes, and other species of monkeys and apes, including Chimpanzee (Ebeku, 2005). According to Ebeku, Elephants have also been discovered in this region. Slater's guenon (*cercopithecus scateri*), known to be endemic to Nigeria, is found in the Niger Delta ecosystems (Ebeku, 2005). Most of these species are not widely distributed in viable populations in the Niger Delta of recent, and are now being classified as vulnerable, threatened, or endangered.

⁸ Until his death, Powell, a Canadian Scientist and academic at the Rivers State University of Science and Technology, Port Harcourt, Nigeria, has done much of the recent works on this area.



Figure 9: Squirrel in the Niger Delta Region of Nigeria

Various studies have indicated that the commonest fish species in the Niger Delta include croakers, barracuda, shiny nose, and catfish; crustacean and molluscs are found in abundance. Powell (1993)⁹, from his study of freshwater fish species concludes that the Niger Delta has more freshwater fish species (197) than any other coastal system in West Africa. The NDWC has also found sixteen fish species, that are endemic to the region, and another twenty-nine that are near endemic¹⁰.

According to the World Bank, over 330 different species of birds have been identified in the Niger Delta (World Bank, 1995). Among which are the parrots and the palm nut vulture. In addition, some species, which are vulnerable (such as the Hammer kop (*Scopius Umberto*) which are rare over much of their ranges, remain abundant in the Niger Delta (Ebeku, 2005). The delta is also an important habitat for trans-hemispheric migratory bird species (World Bank, 1995). From the above accounts, it can be seen that the Niger Delta is very rich in biodiversity, which is naturally distributed in different ecological zones. The biological diversity is more concentrated in the freshwater and Barrier Island ecological zones. The extreme hydrological conditions of the mangrove forests limit their biological richness (World Bank, 1995).

⁹ Powell (1993).

¹⁰ NDWC (1995).

Flora

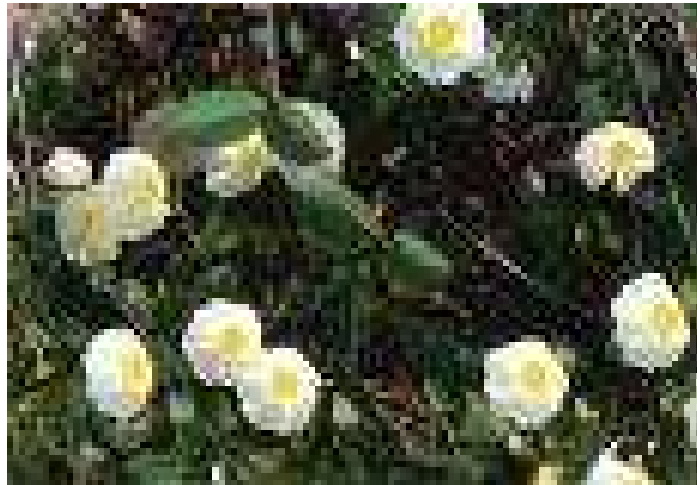


Figure 10: Flora of the Niger Delta Region of Nigeria

The delta region is cited as one of the most poorly collected areas of West Africa for plant specimens (World Bank, 1995). However, studies indicate that the mangrove forests of the Niger Delta consist mostly of the red mangrove tree (*Rhizophora racemosa*) with its characteristic stilt or prop roots. Other trees include the smaller black mangrove and white mangrove (Ebeku, 2005). Ecologically, the mangrove floor is very important to a lot of smaller flora and fauna and to the human/eco-food chain.¹¹ Salt ferns can be found in higher mangrove, while the exotic spiny false date (*Nypa fruticans*) colonizes cleared areas, and apart from these, there are also the freshwater raphia swamps, floodplain forest and upland rainforest (Ebeku, 2005).

2.8 The Hydrology and Geology of the Niger Delta

The Deltas and estuaries, with their saline wetlands have a total surface area of 858,000 hectares, while freshwaters cover about 3,221,500 hectares (Nwilo and Badejo, 2005). Other water bodies, including small reservoirs, fishponds and miscellaneous wetlands suitable for rice cultivation cover about 4,108,000 hectares (Kuru, 2004).

The entire Gulf of Guinea is highly stratified with a thin surface layer of warm fresh tropical water (Longhurst, 1964). The stratification of the upper water column along the Gulf of Guinea is generally very strong except in areas subjected to upwelling events.

The Nigerian coastal geology is sedimentary and dominated by the geology of the Niger Delta (Nwilo and Badejo, 2005). The Niger Delta region is composed of an overall

¹¹ SPDC, Ecological Zones of the Delta.

classic sequence, which reaches a maximum thickness of 9-12 kilometers (Ibe, 1988). The Nigerian continental shelf is narrow in the west (less than 30km) but relatively broad off the Niger Delta and the eastern flank where it measures 45-80km in width. The shelf is interrupted by several submarine canyons, which include Avon, Mahin and Calabar Canyons (Nwilo and Badejo, 2005).

The natural delta of the Niger River is a vast sedimentary basin. The deltaic deposits comprise mainly medium to coarse unconsolidated sands, silt, clay, shale and peat. The delta is mostly flat, low-lying swampy basin criss-crossed by a dense network of meandering rivers and creeks

Chapter Three

Environmental Sustainability and Sustainable Development Issues in the Niger Delta Region of Nigeria

The Nigerian government has packaged some reform strategies aimed at reducing poverty, and ensure the sustainable development of the rural areas with special consideration to the Niger Delta region. These strategies were designed to cushion the effects of poverty, empower the rural populace economically, and then provide the necessary amenities for a better livelihood, and develop the rural areas. The following strategies have been designed for these purposes: National Economic Empowerment and Development Strategy (NEEDS) and Niger Delta Development Commission (NDDC). This Chapter would examine these strategies and the policies that have been adopted by the government aimed at making the region environmentally sustainable and then eradicate extreme poverty. This chapter also discussed issues concerning Corporate Social Responsibility and Sustainable Development in the region.

3.0 Introduction

The world in which we live now is often referred to as dynamic and turbulent. This turbulent environment, characterized by a high degree of relevant uncertainty and system discontinuities, was first noticed as emergent by Emery and Trist (1965), and described as Type IV in their seminal work "The Causal Texture of Our Environments". Within this type of environment, deterministic linear thinking and mechanistic problem-solving approaches are proving insufficient to deal with the increasing complexities of our times, particularly regarding social, economic and environmental issues (Funtowics and Ravetz, 1991).

The importance of environmental sustainability however defined, as the foundation for social, institutional, and economic well-being, is becoming globally recognized. The need for rethinking development approaches in a way that best guarantees environmental, social, institutional, and economic sustainability has been acknowledged and documented by researchers, social scientists, and development agencies throughout the world (Anderson, 1991; Beckerman, 1992).

What remains to be determined is the means by which social, economic, and environmental sustainability can be best achieved. Environmental degradation, such as deforestation, desertification, wetlands destruction, air and water pollution, keep reaching unprecedented proportions. This is particularly evident in some parts of the "less developed" world (Douthwaite, 1993; Ducting and Lange, 1994; Hudson, 1991).

The increasing pressure of global free trade and the inefficient use and allocation of natural resources in these parts of the world impose ever-greater constraints on the livelihoods and well-being of local peoples. Negligible man-made capital assets combined with non-existent or ill-defined property rights, inaccessible financial services, inadequate or non-existent safety nets in time of disaster or stress, and inability (or unwillingness due to inability) to participate in decision-making, forces people to adopt ever shorter time horizons. These forced decisions favor immediate needs and goals over long-term objectives or ideals and most often contribute to a downward spiral of economic, social, institutional, and environmental degradation (IFAD, 1995).

A focus on what may constitute the best means to deal with uncompensated effects (i.e., negative externalities) and unsustainable project outcomes associated with development programs must become a priority in local and global development strategies. This focus was somewhat acknowledged in 1987 by the World Commission on Environment and Development (WCED, 1987), or Bruntland Report, and again in June 1992 at the Rio Summit by the United Nations Development Commission (UNDC, 1993) when it was stated that "Democracy at all levels of government, the involvement of community groups and non-governmental organizations, and equal rights for all are key to sustainable development." However, it does not seem feasible to translate this statement into actions, and much less to accomplish a "sustainable development," without a conceptual knowledge of human organizations and their underlying behaviors.

3.1 Environmental Sustainability Issues in Nigeria

Environmental degradation is the damage to the biosphere as a whole due to human activity. Environmental degradation occurs when nature's resources (such as trees, habitat, earth, water and air) are being consumed faster than nature can replenish them, when pollution results in irreparable damage done to the environment or when human beings destroy or damage ecosystems in the process of development. In Nigeria today there are so many practices especially those relating to industrialization that is quite

unsustainable to the environment. Environmental degradation can take many forms including, but not limited to, unsustainable extraction of natural resources, desertification, deforestation, extinction and radioactivity. Some of the major causes of such degradation include: overpopulation, urban sprawl, industrial pollution, waste dumping, intensive farming, over fishing, industrialization, introduction of invasive species and a lack of environmental regulations.

The goal of environmental sustainability is to minimize these and other causes, to halt and, ideally, reverse the processes they lead to. An unsustainable situation occurs when natural capital (the sum total of nature's resources) is used up faster than it can be replenished. Sustainability requires that human activity, at a minimum, only use nature's resources at a rate at which they can be replenished naturally.

Theoretically, the long-term result of environmental degradation would result in local environments that are no longer able to sustain human populations to any degree. Such degradation on a global scale would, if not addressed, of course mean extinction for humanity.

In the short-term, environmental degradation leads to declining standards of living, the extinctions of large numbers of species, health problems in the human population, conflicts, sometimes violent, between groups fighting for a dwindling resource, water scarcity and many other major problems.

The issue of Environmental Sustainability cannot be conclusive without linking it to Sustainable Development. Of course to achieve Sustainable Development, the environment must be taken into serious consideration. This Chapter would therefore explain the indicators of Sustainable Development and examine the progress made so far in achieving the Millennium Development Goals (MDGs) by the Nigerian government. It would also explain the three important components of Sustainable Development (environment, economy and social issues). Some aspects of sustainability assessment would also be explained in this Chapter.

3.2 The Concept of Sustainable Development

Sustainable development has been defined in many ways, but the most frequently quoted definition is from Our Common Future, proposed by World Commission on Environment and Development also known as the Brundtland Report (1987). This report defines sustainable development as follows:

According to Brundtland Commission (1987), “Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs”. It contains within it two key concepts:

- the concept of **needs**, in particular the essential needs of the world's poor, to which overriding priority should be given; and
- the idea of **limitations** imposed by the state of technology and social organization on the environment's ability to meet present and future needs."

All definitions of sustainable development require that we see the world as a system - a system that connects space; and a system that connects time.

Based on the above concepts of sustainable development, the Niger Delta region belongs to the world's poor and therefore needs a special attention in all the three pillars of sustainability so as to achieve environmental sustainability in the region.

Table 3: Illustration of the Concept of Sustainable Development

Consumption of renewable resources	State of environment	Sustainability
More than nature's ability to replenish	Environmental degradation	Not sustainable
Equal to nature's ability to replenish	Environmental equilibrium	Steady-state Sustainability
Less than nature's ability to replenish	Environmental renewal	Sustainable development

(Source: http://en.wikipedia.org/wiki/Sustainable_development)

Following the release of the WCED's report, *Our Common Future*, debates on the environment and its impact on the socioeconomic and political development have dominated the centre stage at various international fora. Established by the United Nations (UN) in 1983, with Gro Harlem Brundtland (the then Prime Minister of Norway) as chairman, the WCED had the following terms of reference:

- to propose long-term environmental strategies for achieving sustainable development by the year 2000 and beyond;
- to recommend ways concern for the environment may be translated into greater cooperation among developing countries and between countries at different stages of economic and social development and lead to the achievement of common and mutually supportive objectives that take account of the interrelationships between people, resources, environment, and development;
- to consider ways and means by which the international community can deal more effectively with environmental concerns; and
- to help define shared perceptions of long-term environmental issues and the appropriate efforts needed to deal successfully with the problems of protecting and enhancing the environment, a long-term agenda for action during the coming decades, and aspirational goals for the world community.¹²

WCED defines sustainable development as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs." It goes on to recognize the inevitability of contending interpretations of the concept, but nevertheless argues that these "must share certain general features and must flow from a consensus on the basic concept of sustainable development and on a broad strategic framework for achieving it."¹³ Everybody agrees with the basic argument of the concept, but there seems to be no universal consensus on its meaning and implications.

The WCED's thesis of sustainable development posits that the present generation has been reckless and wasteful in both its exploitation and use of natural resources by pursuing a series of socioeconomic and industrial policies which endanger global environmental security¹⁴. Viewed as a doctrine of qualitative societal change, sustainable development underlines the perils of global environmental degradation - oil spills, deforestation, acid rain, ozone depletion, toxic waste, etc. - and calls for the institution of policies that would:

- do less damage to the environment;
- meet the "needs" of the present generation; and

¹² *The World Commission on Environment and Development. Our Common Future*, London, 1987

¹³ *ibid*., p.43

¹⁴ The problematic of sustainable development and corporate social responsibility: policy implications for the Niger Delta. A conference paper by O. Igbo Natufe

- also allow "future generations" to meet their own needs.

To achieve the above objectives, the WCED urged governments to pursue a new developmental strategy that can both ensure continued economic growth and ecological stability with less exploitation and use of natural resources. It condemned the inequities within and among nations, and called for a restructuring of contemporary economic relations to guarantee an equitable distribution of national and international wealth.

Two issues emerged as vital from the WCED's notion of sustainable development. First, nations must reorient their developmental strategies while meeting their respective human and societal "needs." Second, and more important, the consumptive patterns of the present generation must not be allowed to exhaust natural resources so that future generations can also meet their own needs. The question of equity -- intra and inter-generational, and international -- emerges as a critical element in the WCED's conceptualization of sustainable development.¹⁵

3.3 Important Milestones in Sustainable Development

Stockholm Agreement of 1972.

In 1972, 113 nations attended the United Nations' Conference on the Human Environment in Stockholm, Sweden. It was the start of the global efforts to tackle environmental problems. The delegates at the conference discussed many issues. These included:

- the human impact on the environment;
- population growth;
- social and economic development;
- help to developing nations;
- the part that governments should play in developing their own countries without harming the environment for other countries;
- the contributions that technology and education can make to tackling environmental issues.

¹⁵ ibid

The conference made the link between securing a good quality of life for all the people on the planet. This needed to be considered for future generations as well as the present.

The conference led to the establishment of the United Nations Environment Program (UNEP) and other environmental organizations.

Brundtland Report – Our Common Future 1987

The United Nations set up a commission to look at environmental issues in 1983. It was headed by the Norwegian Prime Minister, Gro Harlem Brundtland. It quickly became known as the Brundtland report.

The Brundtland commission researched into environmental and economic issues before publishing its final report, *Our Common Future*, in 1987.

The report highlighted the idea of sustainable development and defined it as:

"Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs".

The report suggested that international governments should meet to look at how to best reduce the effects of human activities on the environment for future generations. This led to the first Earth Summit, held in Rio, Brazil in 1992.

Rio Earth Summit of 1992

June 1992 saw the first truly global conference on environmental issues. Over 30,000 delegates attended the conference and this included more than 100 heads of state. It brought together governments, environmental groups, businesses and individuals from all over the world.

The conference led to agreements on:

- retaining the biodiversity of the planet;
- reducing climate change;
- management of the world's forests and rainforests;
- a declaration on environment and economic development;

- a plan for governments to implement actions to address a wide range of environmental issues. This was known as Agenda 21. It still influences local and national sustainable development policies today.

Agenda 21 committed governments to seek ways to move towards a more sustainable future. This looked at social developments, such as reducing poverty, improving education and strengthening the representation of different groups such as youth, women and indigenous peoples.

It also tackled environmental issues by looking at how making improvements at a local level can have an effect on a global scale. For example, individuals reducing their energy consumption can have an effect nationally and globally on emissions of carbon dioxide.

Kyoto Protocol of 1997

In 1997, the Kyoto conference looked at the issue of global warming and how to reduce the emissions of gases, such as carbon dioxide, that are causing it. It set up a framework that required countries to reduce their emissions of greenhouse gases to an average of 5% below the levels they produced in 1990. This reduction should be reached by 2012.

The Kyoto treaty assigned countries with a level of greenhouse gases that they were permitted to produce. Low CO₂ producers can sell their allowances to high CO₂ producers. This is called 'carbon trading'.

The treaty, in its original format, was never implemented. Not enough countries would agree to it. Finally, in 2005, a scaled-down version of the treaty was agreed with 120 countries. This included industrialized countries like the UK and Russia. However the USA, a major producer of greenhouse gases, is still not part of the agreement.

Government groups in the USA argue that the Kyoto agreement is out of date and that efforts should be concentrated onto finding alternatives to carbon-based fossil fuels.

Some organizations, such as the Intergovernmental Panel on Climate Change, believe that the reductions in emissions are not large enough and argue that they should be cut by 60%. But others argue that such big cuts would have a harmful effect on economic sustainability (United Nations Framework for Climate Change, Kyoto, Japan, 1997).

Johannesburg World Summit of 2002

Ten years after the first Earth Summit in Rio, a conference in Johannesburg met to review progress towards sustainable development. This conference looked at social issues such as poverty and poor sanitation that affect an estimated 1.1 billion people world wide. It also considered global warming and climate change.

Major agreements were:

- to half the amount of people without access to safe drinking water and good sanitation;
- set up a fund to reduce poverty;
- increase the fairness of world trade;
- recognize that access to adequate healthcare is a human right;
- reduce the loss of species by 2015.

The Johannesburg conference looked at how to improve the living conditions for billions of people on the Earth.

Proper sanitation and clean drinking water would reduce diseases such as cholera that annually kills millions, especially young children. Governments agreed to work towards making affordable energy available to more people and increase the proportion from renewable sources.

The Kyoto agreement received a boost when the Russian government agreed to sign up to the Climate Change Protocol. However, the United States continued to opt out of the treaty.

3.4 Achieving Sustainable Development in Nigeria

Sustainable development has been defined by Brundtland's Commission (1987) as shown above; it implies a better quality of life for everyone, now and for generations to come. It offers a vision of progress that integrates immediate and longer-term needs, local and global needs, and regards social, economic and environmental needs as inseparable and interdependent components of human progress.

The issue of sustainable development in Nigeria is still far fetch, although most of the foundations have been laid by government; for example, the formation of local Agenda 21 committees at the federal and state levels, inauguration of Environmental Action Plan committees at all levels of government, being a signatory to the Kyoto Protocol and other international Treaties involved in environmental management, upgrading an environmental agency (Federal Environmental Protection Agency – FEPA) into a full fledge ministry (Federal Ministry of Environment – FMENV), introduction of poverty eradication programs, and the commitment of the government to investing in environmental management strategies. Nigeria will start reaping the dividends of sustainable development only when the above programs and strategies are fully implemented.

Although the above definition of sustainable development is commendable, but it is not operational, rather it shares at least two things in common with most definitions of sustainable development: (1) they are all anthropocentric; and, (2) they all speak of an ideal process or state. Based on these two observations and on the seminal work of Ackoff and Emery (1972), the best operational definition of sustainability to this day is “a Socio-Ecological Process Characterized by Ideal-Seeking Behavior on the part of its Human component”¹⁶. Sustainable development will not be brought about by policies only: it must be taken up by society as a principle guiding the many choices each citizen makes every day, as well as the big political and economic decisions that have ramifications for many. Realizing this vision requires profound changes in thinking, in economic and social structures, and in consumption and production patterns.

The interdependencies of the economic, environmental, and social justice elements of our world require new ways of thinking about things and taking action that will truly create a future where human society and nature coexist with mutual benefit, and where the suffering caused by poverty and natural resource abuse is eliminated. Sustainable development calls for improving the quality of life for all of the world’s people without increasing the use of our natural resources beyond the Earth’s carrying capacity. While sustainable development may require different actions in every region of the world, the efforts to build a truly sustainable way of life require the integration of action in three key areas (see the three pillars of sustainability in Box 1 below):

¹⁶ A definition given by Ackoff and Emery (1972)

Economic growth and equity – Today's interlinked, global economic systems demand an integrated approach in order to foster responsible long-term growth while ensuring that no nation or community is left behind.

Conserving natural resources and the environment – To conserve our environmental heritage and natural resources for future generations, economically viable solutions must be developed to reduce resource consumption, stop pollution and conserve natural habitats.

Social Development – Throughout the world, people require jobs, food, education, energy, health care, water and sanitation. While addressing these needs, the world community must also ensure that the rich fabrics of cultural and social diversity, and the rights of workers, are respected, and that all members of society are empowered to play a role in determining their futures (Warren Flint, 2007).



Figure 11: Sustainable Development Model (Warren Flint, 2007)

Box 1: Three Pillars of Sustainability

- *Social development*
- *Environmental consideration*
- *Economic growth.*

These are very important ingredients in Sustainable development.

Sustainable development does not focus solely on environmental issues¹⁷. More broadly, sustainable development policies encompass three general policy areas: economic, environmental and social. In support of this, several United Nations texts, most recently the 2005 World Summit Outcome Document, refer to the "interdependent and mutually

¹⁷ Sustainable by design: Economic Development and Natural Resource use by J.C. Wandenberg Boschetti

reinforcing pillars" of sustainable development as economic development, social development, and environmental protection.

3.4.1 Some Indicators of Sustainable Development in a Country

Sustainability is a characteristic of dynamic systems that maintain themselves over time; it is not a fixed endpoint that can be defined. Environmental sustainability refers to the long-term maintenance of valued environmental resources in an evolving human context. The best way to define and measure sustainability in the environmental viewpoint is to focus on natural resource depletion and whether the current rates of resource use can be sustained into the distant future (Goldemberg, 2000).

The issue of sustainable development in the Niger Delta is critical. There has been series of crises in recent time in the region leading to hostage taking of Oil Workers and loss of lives. The cause of the crises was simply due to the negligence of the local communities in this Oil rich region in the business of Oil production.

According to ESI (2005), some of the following indicators below are used to assess the environmental sustainability of a country:

- A country is more likely to be environmentally sustainable to the extent that its vital environmental systems are maintained at healthy levels, and to the extent to which levels are improving rather than deteriorating;
- A country is more likely to be environmentally sustainable if the levels of anthropogenic stress are low enough to engender no demonstrable harm to its Environmental systems;
- A country is more likely to be environmentally sustainable to the extent that people and social systems are not vulnerable to environmental disturbances that affect basic human wellbeing; becoming less vulnerable is a sign that a society is on a track to greater sustainability;
- A country is more likely to be environmentally sustainable to the extent that it has in place institutions and underlying social patterns of skills, attitudes, and Networks that foster effective responses to environmental challenges;
- A country is more likely to be environmentally sustainable if it cooperates with other countries to manage common environmental problems, and if it reduces

negative transboundary, environmental impacts on other countries to levels that cause no serious harm.

3.5 Development & Economic Growth

Development is a qualitative change in the state of a given phenomenon¹⁸. It is the sum total of all socio-economic and technological indicators used to measure the advancement of society and individuals' state in the society: standard of living, life expectancy, self-regulating social institutions, industrial base, etc. But, how can our conception of development be related to the fundamentals of sustainable development as elaborated by the WCED?

The over arching importance of sustainable development is geared towards the improvement of the quality of life in all its ramifications, provided that environmentally sound policies are pursued vigorously, and adhered to by society. The question of whether it is possible to have both a high quality of life and, at the same time, a high quality of the environment, is a key issue which has generated much debate in the literature and at different fora. While Ferdinand E. Banks, a renowned Professor of Economics argues that "it is theoretically possible to have a material standard as high or even higher than that being enjoyed today, without tolerating a further deterioration of the environment",¹⁹ but Griffiths and Young argue otherwise. They postulate that: Our task is not to devise new technologies, institutions, or policies designed to allow us to produce more with less. We must discover new and affirmative meanings in life without economic or material growth. The challenge before us is one of cultural and even spiritual revolution. This, in our view, is the proper meaning of sustainable development. It carries far beyond the often cited need for change in "lifestyles" and the like.²⁰

The above views on the concept of development vis-à-vis sustainable development represent the opposing schools of thought on the subject. Banks bases his argument on the premise that the evolving nature of technological advancement will make it possible to drastically reduce environmental damage while, at the same time, increasing society's

¹⁸ The problematic of sustainable development and corporate social responsibility: Policy implications for the Niger Delta. A conference paper by O. Igho Natufe, 2001.

¹⁹ Ferdinand E. Banks, *Scarcity, Energy, and Economic Progress*, Lexington, Mass.; 1973, p.7.

²⁰ Griffiths and Young, *op.cit* ., p. 9.

capability to produce more goods. Griffiths and Young, on the other hand, do not feel it is "our task...to devise new technologies, to allow us to produce more with less." They propagate what is in effect a halt to development. This position is, unfortunately, based on the doomsday forecast which foresees a "depletion of natural resources" if the current practice of exploitation is continued.²¹ As for non-renewable resources, like fossil fuels and minerals, their use reduces the stock available for future generations. But this does not mean that such resources should not be used. In general the rate of depletion should take into account the criticality of that resource, the availability of technologies for minimizing depletion, and the likelihood of substitutes being available.²²

If development is to have any positive meaning, it is essential that its fundamental goals be the proper blending of technology and energy that will contribute to the improvement of society and the environment. After stating that the "conception of development embedded in the notion of sustainable development is fatally flawed", it is confusing to note that Griffiths and Young proceeded to propose development "without economic or material growth." While it may seem fashionable to criticize the WCED for not formulating a universally acceptable theoretical construct of development, the thesis of Griffiths and Young has not enhanced our knowledge of the subject.²³

3.5.1 Economic Growth

Another key fundamental argument of sustainable development is built around the notion of producing "more with less" energy. How can nations increase their Gross National Product (GNP) and reduce their total energy consumption at the same time? This is a major challenge confronting all nations, including the LDCs. The search for alternative sources of energy, which is geared towards the reduction of pollution and the provision of the prerequisites for a new paradigm of development that would improve the overall standard of living of their citizens, remains a major policy challenge for governments. In a recent study carried out by Lee Solsbery, he stated the environmental implications of growing energy consumption for OECD and non-OECD nations. He postulated that any gains from a continued decline in energy intensity will be rendered obsolete by "the absolute rise in global energy demand resulting from the inertia in energy systems and the

²¹ The problematic of sustainable development and corporate social responsibility: Policy implications for the Niger Delta. A conference paper by O. Igbo Natufe, 2001.

²² *Our Common Future*, pp. 45-46.

²³ The problematic of sustainable development and corporate social responsibility: Policy implications for the Niger Delta. A conference paper by O. Igbo Natufe, 2001.

rigidities in energy infrastructure."²⁴ This means that the rate of energy consumption has severe implications for the global environmental systems.

North Americans consume around 1 500 kilogram of oil equivalent (kgoe) per year just for their transportation needs, total per capita energy consumption in India is less than 25 kgoe per year. Similarly, the average OECD person in 1994 consumed 30 times the electricity than the average Indonesian consumed, despite the fact that Indonesian electricity consumption increased by more than 20 times since 1971.²⁵ A review of the forecast by the International Energy Agency (IEA) on global energy consumption up to 2010 and beyond reveals a major policy challenge for governments and industries. According to the IEA:

- "world energy demand is likely to increase by some 60 percent between 1994 and 2010;
- fossil based fuels will account for more than 90 percent of primary energy demand in 2010 and probably at least 80 percent in 2020;
- the bulk of growth in demand will originate in the five largest non-OECD countries (Russia, China, India, Brazil and Indonesia) and in other developing countries;
- CO₂ emissions will rise rapidly; more than a third of the increase will be in India and China;
- international and intra-regional trade in energy will become more widespread;
- OECD oil and gas import dependence will increase sharply;
- very large investment requirements will need to be satisfied in non-OECD countries; and
- greater energy efficiency could have a dramatic impact on energy developments in the final demand for heat, mainly in the non-OECD world."²⁶

The above vividly illustrates the severity of the environmental challenge from the perspective of energy consumption. It also demonstrates that, in order for us to achieve

²⁴ See, Lee Solsbery, "Energy Challenges and Opportunities for Action", in *Sustainable Development: OECD Policy Approaches for the 21st Century*, OECD, Paris, 1997, pp.89-99.

²⁵ *ibid* ., pp.90-91

²⁶ *ibid* ., pp.90.

the goals of sustainable development we will have to introduce and apply environmentally friendly technologies. According to Lee Solsbery, the challenge for policy in this regard "is to combine a favourable context for research, development and deployment with market-based evaluation and implementation mechanisms."²⁷

Sustainable development does not mean "no development". A critical element of sustainable development deals with the institution of development alternatives that would promote the quality of the environment while satisfying our needs. It also implies a re-ordering of our needs in alignment with the capacity of the ecosystem. While it may not imply a negation of opportunities to improve our collective standard of living, it does imply that we must not exceed the bounds of the environment.

This brings us to a vital recurring theme in the thesis of sustainable development as enunciated by the WCED: the environment-economy integration in the decision making process. A clarification of this concept is crucial in our pursuit of sustainable development so that no sector of the business community will conduct "business as usual" simply because of the agreed notion of economic growth. This is especially true in Nigeria's Niger Delta, where the multinational oil corporations and their local allies may be tempted to recklessly pursue economic growth at the expense of environmentally sound policies.

Profit may still be an important factor in all business considerations, but it is no longer going to be *the* overriding element in setting up a business. Where a doubt exists in the implications of a proposed industrial project vis-à-vis the enhancement of ecological stability, the issue should be resolved in favour of the environment and the proposed projects be abandoned irrespective of the projected margins of profits. Thus, the concept of integration in this case is not one of a 50-50 ratio between the environment and the economy, but one in which the former retains a recognized primacy.

The concept of environment-economy integration is not to "balance" the scale between the environment and the economy, but rather to ensure that the scale is significantly tilted in favour of the environment. Therefore, the challenge for Nigerian governments (federal and state) and industries is to construct and implement enduring policies that recognize

²⁷ *ibid* ., pp.95.

the imperative of enhancing the quality of the environment. It is only within this confinement that the pursuit of economic growth should be considered by the regime regulators. Governments must intervene "to reduce the negative environmental externalities from the exploitation of natural resources." The concept of environment-economy integration must recognize the primacy of the *social* dimension of sustainable development. Thus, it is imperative for governments to ensure that the social benefit of natural resources exploitation is not compromised. This explains why, "in most OECD countries, mining and oil production are subject to strict controls relating to environmental discharge and land disturbance, and companies are usually required to post bonds to ensure that funds will be available to restore production sites (OECD, 1999)".

As we consider the merits of economic growth, it is vitally important that we pay attention to the macroeconomic questions raised by the OECD which are relevant to sustainable development and the natural resource sectors: What economic growth rates are acceptable and possible over the long term, at national, regional and worldwide levels, under a sustainable development model? How efficiently are various types of natural resources (renewable and non-renewable) currently being exploited, and how can this be improved to ensure the desired rate of economic growth and sustainable resource development? (OECD, 1990).

3.6 The Concept of Corporate Social Responsibility

Corporate social responsibility has acquired broad support in various international fora. While there is no universally accepted definition of the concept, there is however a consensus that it implies a demonstration of certain responsible behavior on the part of governments and the business sector toward society and the environment. It refers to how business takes account of its economic, social and environmental impacts in the way it operates, maximizing the benefits and minimizing the downsides.²⁸

Three important international institutions have underlined the need for governments and companies to adhere to the principles of *corporate social responsibility*. These are the World Business Council for Sustainable Development (WBCSD), the Organization for Economic Cooperation and Development (OECD), and the Dow Jones Sustainability

²⁸ Beyond Corporate Social Responsibility: The Scope for Corporate Investment in Community Driven Development. Document of the World Bank, 2006.

Indexes (DJSGI). Their policies and guidelines as representing a global consensus on the imperative of corporate social responsibility reviewed below.

3.6.1 World Business Council for Sustainable Development (WBCSD)

The WBCSD is a major driving force on the concept of corporate social responsibility.²⁹ Established in January 1995, the WBCSD is an association of 140 international companies drawn from more than 30 countries representing more than 20 industrial sectors. Two major international organizations - the Business Council for Sustainable Development (BCSD) and the World Industry Council for the Environment (WBCE) - merged to form the WBCSD. Its reports on corporate (social) responsibility have helped to focus global attention on the necessity for governments and business to demonstrate a degree of responsibility toward society. The WBCSD defines *corporate social responsibility* as the continuing commitment by business to behave ethically and contribute to economic development while improving the quality of life of the workforce and their families as well as of the local community and society at large.

During its internal debate on the concept of *corporate social responsibility*, members of the WBCSD grappled with the problems of clarity without losing the vital focus of the concept³⁰. The WBCSD sought a conceptual framework that would remain loyal to its "three fundamental and inseparable pillars" of sustainable development: the *generation of economic wealth*, followed by *environmental improvement*, and *social responsibility*.³¹ It proposed a global strategic approach on how to define its third pillar: *corporate social responsibility*.

According to the WBCSD, *corporate social responsibility* defines what a company has to do, in order for it to win and enjoy the confidence of the community as it generates *economic wealth* and responds to the dynamics of *environmental improvement*. The WBCSD posits corporate social responsibility as a vital link "to the long-term prosperity

²⁹ See World Business Council for Sustainable Development, *Meeting Changing Expectations: Corporate Social Responsibility*, Geneva, Switzerland, March 1999; *Corporate Social Responsibility: Making Good Business Sense*, Geneva, Switzerland, January 2000.

³⁰ The problematic of sustainable development and corporate social responsibility: Policy implications for the Niger Delta. A conference paper by O. Igho Natufe, 2001.

³¹ See WBCSD, *Corporate Social Responsibility: Making Good Business Sense*.

of companies as it provides the opportunity to demonstrate the human face of business" and underscores "the value of creating practical partnerships and dialogue between business, government, and organizations."³² Thus, the term corporate responsibility was seen as pertaining to the WBCSD "three fundamental and inseparable pillars" of sustainable development.

Corporate responsibility, therefore, defines the *global* behavioral expectations of governments and corporations toward the three constituent units of sustainable development. The WBCSD has identified the following "core values" as integral to corporate social responsibility:

- Human Rights
- Employee Rights
- Environmental Protection
- Community Development
- Supplier Relations
- Monitoring
- Stakeholder Rights

Our interest is in human rights, employee rights, environmental protection, community development, and stakeholder rights. These are the core values that define the responsibilities of corporations (and governments) to the society: corporate social responsibility³³. Thus, what benefit or harm would a company's project bring or does to the human rights of the society, the employee rights of its workers, the environmental protection of the community, the development of the community, and the rights of the community as legitimate stakeholders?

The community is respected as a stakeholder in the project, the company is therefore compelled to construct a base for close collaboration and consultation with the community, as well as assist the community in capacity building in all aspects of social and economic development. To achieve this level of responsibility, a company must implement a transparent policy of working with the community to ensure that these core values are adhered to. It must also ensure that environmental protection is not compromised, and that any environmental risks arising from its project must be equitably

³² *Ibid*, p.6.

³³ *Ibid*, p8.

distributed among all segments of the society, and must not be borne disproportionately by the poor. In its broadest terms, therefore, the concept of corporate social responsibility is inextricably linked to the notion of environmental justice.

Corporate social responsibility is not only the expected ethical behaviour of companies. It also defines the self interest of companies. By investing in the core elements of corporate social responsibility, a company is also simultaneously facilitating a base conducive to the emergence of a healthy and well-educated community that would assist the company in attaining its economic growth objectives. It is a win-win strategy.

3.6.2 Organization for Economic Cooperation and Development (OECD)

The OECD has also been engaged in developing the concept of corporate social responsibility. At its Ministerial Meeting on June 27, 2000, the OECD approved a set of *Guidelines for Multinational Enterprises*.³⁴ In the Guidelines, were a set of "voluntary principles and standards for responsible business conduct consistent with applicable laws." The OECD stressed the need for both governments and companies to demonstrate their *corporate responsibility* by pursuing sound environmental and socially based policies. The *Guidelines* are:

- to ensure that the operations of these enterprises are in harmony with government policies;
- to strengthen the basis of mutual confidence between enterprises and the societies in which they operate, and;
- to enhance the contribution to sustainable development made by multinational enterprises.

They challenge multinational enterprises "to implement best practice policies for sustainable development that seek to ensure coherence between social, economic and environmental objectives."³⁵ The General Policies of the Guidelines advise enterprises to:

- Contribute to economic, social and environmental progress with a view to achieving sustainable development;
- Respect the human rights of those affected by their activities consistent with the host government's international obligations and commitments;

³⁴ See, The *OECD Guidelines for Multinational Enterprises*, Paris, June 27, 2000.

³⁵ *Ibid.*, pp. 1-2.

- Encourage local capacity building through close co-operation with the local community, including business interests, as well as developing the enterprise's activities in domestic and foreign markets, consistent with the need for sound commercial practice;
- Encourage human capital formation, in particular by creating employment opportunities and facilitating training opportunities for employees;
- Refrain from seeking or accepting exemptions not contemplated in the statutory or regulatory framework related to environmental, health, safety, labour, taxation, financial incentives, or other issues;
- Support and uphold good corporate governance principles and develop and apply good corporate governance practices;
- Develop and apply effective self-regulatory practices and management systems that foster a relationship of confidence and mutual trust between enterprises and the societies in which they operate;
- Promote employee awareness of, and compliance with, company policies through appropriate dissemination of these policies, including through training programs;
- Refrain from discriminatory or disciplinary action against employees who make bona fide reports to management or, as appropriate, to the competent public authorities, on practices that contravene the law, the Guidelines or the enterprise's policies;
- Encourage, where practicable, business partners, including suppliers and sub-contractors, to apply principles of corporate conduct compatible with the Guidelines; and
- Abstain from any improper involvement in local political activities.

Though the OECD Guidelines are addressed to multinational enterprises, they also apply to domestic companies as well. A critical element of corporate responsibility is the need for governments and companies to incorporate all the three dimensions of sustainable development - *economic*, *environmental*, and *social* - in their decision making process. Most countries and companies seem to ignore or pay little attention to the social component of sustainable development. This was apparent in a recent OECD study as it

advised member states to formulate and adopt a more robust and balanced approach to sustainable development that will emphasize the three dimensions.³⁶

3.6.3 Dow Jones Sustainability Indexes (DJSI)

The DJSI also identified social well-being (or corporate social responsibility) as one of its sustainability principles which companies must satisfy in order to be listed in the DJSI. The Dow Jones Sustainability Group Indexes (DJSI) was launched in Zurich, Switzerland, in September 1999, as the first "global equity indexes that track the performance of the leading sustainability-driven companies world-wide. The DJSI includes over "200 of the top sustainability companies in 68 industries in 22 countries. The total market capitalization of the DJSI is 4.3 trillion USD."³⁷

Table 4: Dow Jones Sustainability Indexes (DJSI) Principles³⁸

Sustainability Principles	Components
Technology	The creation, production and delivery of products and services...based on innovative technology and organization that use financial, natural and social resources in an efficient, effective and economic manner over a long-term.
Governance	Corporate sustainability...based on the highest standards of corporate governance including management responsibility, organizational capacity, corporate culture and stakeholder relations.
Shareholders	Shareholders' demands should be met by sound financial returns, long-term economic growth, long-term productivity increases, sharpened global competitiveness and contributions to intellectual capital.
Industry	Sustainability companies should lead their industry's shift towards sustainability by demonstrating their commitment and publicizing their superior performance
Society	Sustainability companies should encourage lasting social well being by their appropriate and timely responses to rapid social change, evolving demographics, migratory flows. Shifting cultural patterns and the need for life-long learning and continuing education.

Companies qualify to be listed in the index if they satisfy the criteria of sustainability of the DJSI. The sustainability performance of listed companies "is assessed and scored on the basis of an industry-specific questionnaire, the analysis of company policies and

³⁶ *ibid.* p.4.

³⁷ See Press Release, Dow Jones Sustainability Group Index, Zurich, September 8, 1999, p.1.

³⁸ *ibid.*, p.6.

reports as well as stakeholder relations." Such companies must demonstrate their commitment to DJSGI sustainability principles, which are: innovative technology, corporate governance, shareholder relations, industrial leadership and social well being.

Thus, the concept of corporate social responsibility has been placed on the global agenda by leading international organizations. It should be seen as a critical challenge to environmental justice as it compels governments and industries to address the distributional inequities of environmental risks, especially in the natural resource sector of the economy.

3.7 Corporate Social Responsibility (CSR) and the Oil Companies Operating in the Niger Delta Region of Nigeria

As we have already discussed the concepts of sustainable development and corporate social responsibility, this section will review the policies of the oil companies operating in the Niger Delta region, and also assess the impact of those policies on the people and environment of the Niger Delta. Shell would be used as a case study in this section, because it is one of the major oil companies operating in the region. We shall try to assess Shell's corporate social responsibility policies and their effect on the region in totality.

As already mentioned in chapter two, Shell discovered Nigeria's first commercial oil field in 1956, at Oloibiri, Rivers State. From a modest production level of 6,000 barrels of crude oil per day (bpd) in 1958 to its current level of more than 1 million bpd, Shell is responsible for almost 50% of Nigeria's production. The company employs over 10,000 staff, including about 4,000 permanent staff. The Niger Delta is the main operating centre of Shell, where the company manages oil mining lease area of "about 31,000 square kilometers; 6,000 kilometers of pipelines and flow lines, 87 flow stations, eight gas plants and more than 1,000 producing wells (SPDC, 2000)."

Though Shell controls only 30% of the shares of SPDC, the company's principles of sustainable development and its corporate membership in the WBCSD determines SPDC's strategies on sustainable development and corporate social responsibility. The other shareholders of SPDC are the Nigerian National Petroleum Company (NNPC) 55%; Elf 10%; and Agip 5%.

Oil exploration is an energy intensive activity with severe implications on people and the environment. Oil companies operating in the Niger Delta, like Shell has adopted the "three pillars of sustainable development" because it makes good business sense to do so. Shell recognizes the interrelatedness of the three dimensions of sustainable development - corporate financial responsibility, corporate environmental responsibility, and corporate social responsibility.

On environmental issues, available evidence suggests that, Shell and other oil companies have satisfied the operating guidelines established and supervised by government authorities - Department of Petroleum Resources (DPR) and the Federal Ministry of Environment (FMEV). These include the execution of Environmental Impact Assessments (EIA) for new projects as well as Environmental Evaluation Reports (EER) for ongoing operations. While the regulations and standards of Nigeria's DPR and FMEV may compare favorably with those of advanced western countries, for example, Canada and the United States, the gap is obviously in the enforcement and control of those regulations and standards. On the infrastructural development of host communities, Shell and other oil companies have performed fairly well in this area by providing some of the basic social amenities to their host communities, but have poor human right records in the Niger Delta according to the Human Rights Group.

3.8 The Implementation of the Millennium Development Goals (MDGs) in Nigeria

In September 2000, at the United Nations Millennium Summit, world leaders agreed to a set of time-bound and measurable goals and targets for combating poverty, hunger, disease, illiteracy, environmental degradation and discrimination against women. Placed at the heart of the global agenda, they are now called the Millennium Development Goals (MDGs). The Summit's Millennium Declaration also outlined a wide range of commitments in human rights, good governance and democracy³⁹.

The MDGs provide a framework for the entire UN system to work coherently together towards a common end. The UN Development Group (UNDG) will help ensure that the MDGs remain at the centre of those efforts. On the ground in virtually every developing country, the UN is uniquely positioned to advocate for change, connect countries to knowledge and resources, and help coordinate broader efforts at the country level⁴⁰.

³⁹ The Millennium Development Goals and the United Nations Role

⁴⁰ Ibid.

- According to official data from UNDP (2004), 54.4 per cent of Nigerians live below the poverty line. Disaggregated indicators on school enrolment, adult literacy rate, food intake, access to water, infant and maternal mortality rates and other social indicators equally paint abysmal picture, all pointing to the enormity of the task of achieving the Millennium Development Goals (MDGs) in Africa's most populous country. The Nigerian Government, with technical and financial support from the United Nations and other development partners, has expressed seriousness in scaling the hurdles between Nigeria and the goals.

Box 2: The United Nations Millennium Development Goals (MDGs)⁴¹



(Source: UN, 2007)

The Nigerian government towards achieving the MDGs has taken a number of concrete steps:

- The National Economic Empowerment and Development Strategy (NEEDS), the national medium-term development blueprint, is aligned to the MDGs;
- An MDG Office has been established to monitor progress and put the country on track;
- A multi-stakeholders committee headed by the President reviews progress every quarter;
- Savings from debt relief are ploughed into MDG-related areas; and

The Virtual Poverty Fund, which gives priority attention to basic social services and food security program, has been established. Some of these measures have already started yielding dividends, but given the enormity of the task, a lot more still needs to be done.

⁴¹ Adapted from UN website (<http://www.un.org/millenniumgoals/goals.html> retrieved July 13, 2007)

3.8.1 Nigeria's Partnership with UNDP in Achieving the MDGs

UNDP has provided both technical and financial supports to enhance Nigeria's capacity to achieve the eight goals. All the four program areas implemented by the Country Office are targeted towards the achievement of the MDGs in Nigeria. Specific support to the MDGs has been provided in the following areas:

- The publication of the annual National MDG Report, starting from 2004. Support to the production of the report include activities such as convening stakeholders meeting on the status of MDGs in Nigeria and organizing the launch of the final report;
- Support to the MDG Villages in the Ikaram/Ibaram Cluster in Ondo State and in Kpampaida, Kaduna State;
- Support to the MDG Office, which monitors, tracks and coordinates MDG-related activities in the country;
- Commissioning of the National MDGs Awareness Survey;
- Nationwide advocacy to create awareness on the MDGs through essay and arts competitions for young people, oral essay competition for rural women and publication of IEC materials on the MDGs;
- Support to civil society under aegis of GCAP Nigeria, a coalition of civil society organizations, to create awareness about the MDGs and related issues.

3.8.2 Nigeria and Meeting the Goals

With the steps taken by the government and support provided by UNDP, some progress has been made. However, more needs to be done. From available reports, the country has high potential to attain three of the Millennium Development Goals, namely,

- Achieving universal primary education;
- Ensuring environmental sustainability; and
- Developing a global partnership for development.

Given the current policy environment and the strong political will, there is also the likelihood of eradicating extreme poverty and hunger⁴². With faithful implementation of the various components of the National Economic Empowerment and Development Strategy (NEEDS), particularly the social charter, the possibility of reducing abject

⁴² National Economic Empowerment and Development Strategy (NEEDS). Nigeria major policy reform agenda.

poverty to less than 17 percent is high. However, based on available information, there is need for sustained efforts to ensure that the country meets the following goals by the year 2015:

- Achieving gender equality and women empowerment;
- Reducing child mortality;
- Improving maternal health; and
- Combating HIV/AIDS, malaria and other diseases.

3.8.3 Progress on the Implementation of Millennium Development Goals (MDG's) in Nigeria

The 2006 report on the MDG's indicates increasing prospects for Nigeria's achievement of some of the stipulated Goals even before the 2015 deadline. The promising areas include; eradication of extreme poverty and hunger; universal primary education; ensuring environmental sustainability; combating HIV/AIDS; Women empowerment and developing of global partnership for development. However, progress on the other goals, particularly on reduction in both infant and maternal mortality rates remain slow, posing serious challenge to the nation. The details of the report are as follows:

Goal 1: Eradicate extreme Poverty and Hunger

Poverty trend has continued to decline progressively from 70 per cent in 1999 to 54 percent in 2005. The outcome of the 2004 Core Welfare Indicators Survey (NBS) shows that the proportion of population living in relative poverty reduced to 54 per cent, while 35 percent out of the 54 per cent of poor people are considered extremely poor.

Goal 2: Achieve Universal Education

The net enrolment ratio in primary education was 84.26 per cent in 2005 as against 81.1 per cent in 2004. The proportion of pupils starting Primary One who reach Primary Five was 74 per cent in 2005, while the literacy rate of 15–24 years old improved from 76.2% in 2004 to 80.2 per cent in 2005.

Goal 3: Promote Gender equality and Empower Women

The ratio of girls to boys in primary education (i.e. girls per 100 boys) as well as in secondary education has improved from 79 per cent in 2004 to 81.0 per cent in 2005. If this trend were maintained, it would be possible to attain the 100 percent level expected

by 2015. The proportion of women in non-agricultural wage employment did not show any remarkable improvement in 2006, while the number of seats held by women in national parliament remained 5.76 per cent. This is a far cry from the 30 per cent affirmative action as enunciated in the NEEDS document.

Goal 4: Reduce Child Mortality

The results under this goal fall far short of expectations. Infant mortality rate (per 1000 live births) deteriorated from 100 per 1000 births in 2003 to 110 per 1000 births in 2005 despite several measures put in place. This might be attributable to mother-child transmission of diseases such as HIV/AIDS. The under-5 mortality rate improved marginally from 201 per 1000 births in 2003 to 197 per 1000 live births in 2005 while the percentage of one-year-olds fully immunized against measles also improved from 31.4 percent in 2003 to 50 percent in 2005.

Goal 5: Improve Maternal Health

There was not much significant progress made in respect to this goal. An increasing maternal mortality rate of 800 per 100,000 live births was reported in 2004 as against 704 in 1999. The data for the 2005-2006 is not yet available to ascertain the actual direction at the moment. However, the proportion of births attended to by skilled health personnel increased albeit, marginally from 36.3 percent in 2003 to 44 per cent in 2005.

Goals 6: Combat HIV/AIDS, Malaria and other Diseases

The prevalence of HIV/AIDS fell from 5.8% in 2001 to 4.4% in 2005. The HIV prevalence among pregnant women aged 15–24 also improved marginally from 5.2 percent in 2004 to 4.4 percent in 2005. Similarly, the percentage of people aged 15–24 reporting the use of condom during sexual intercourse with a non-regular sexual partner increased from 46.3 percent in 2003 to 49.7 in 2005. This is a success story for the nation.

Goal 7: Ensure Environmental Sustainability

The achievements under this goal have been adversely affected by unavailability of data. Available data show that the proportion of total land area covered by forest declined marginally from 13.0 percent in 2004 to 12.6 percent in 2005 while the proportion of total population with access to drinking water was 65 per cent in 2005. The

environmental degradation caused by oil exploration and exploitation in the Niger Delta region has been a great concern, and has not been abated. No appreciable progress has been made in this direction.

Goal 8: Develop a Global Partnership for Development

Tremendous progress has been recorded in the attainment of this goal. The per capita official development assistance to Nigeria has increased from 2.3 in 2004 to 4.0 in 2005. The NEPAD initiative is engendering consensus building at the global level, while regional integration is deepening particularly in the West African Sub-region under ECOWAS.

3.9 National Economic Empowerment and Development Strategy (NEEDS)⁴³

The National Economic Empowerment and Development Strategy—is Nigeria’s plan for prosperity. It is the people’s way of letting the government know what kind of Nigeria they wish to live in, now and in the future. It is the government’s ways of letting the people know how it plans to overcome the deep and pervasive obstacles to progress that the government and the people have identified. It is in addition, a way of letting the international community know where Nigeria stands—in the region and in the world—and how it wishes to be supported. What is the vision for Nigeria? What kind of Nigeria do we want for ourselves, for our children, and for the rest of the world? These questions were the starting point in creating a plan for prosperity. In the three years, it took to develop NEEDS, a dedicated team traveled round the country, holding meetings and workshops to identify what the Nigerian people want for the future, what problems they face, and what can be done to overcome them. NEEDS is the people’s plan. It is up to regular Nigerians as well as the government to see that it is implemented.

Although Nigeria is rich in natural and human resources, seven of every 10 Nigerians live on less than \$1 a day. NEEDS wishes to make poverty a thing of the past in Nigeria. It aims to create a Nigeria that Nigerians can be proud to belong to and grateful to inhabit, a Nigeria that rewards hard work, protects its people and their property, and offers its children better prospects than those they may be tempted to seek in Europe or the United States. All citizens, regardless of gender, race, religion, or politics, should feel that they have a stake in Nigeria’s future and that their loyalty and diligence will be rewarded. The

⁴³ National Economic Empowerment and Development Strategy (NEEDS). Nigeria major policy reform agenda

NEEDS vision is also one in which Nigeria fulfils its potential to become Africa's largest economy and a major player in the global economy.

3.9.1 The Performance of NEEDS in Promoting Environmental Sustainability in Nigeria

The NEEDS focuses on ensuring a safe and healthy environment that will secure the economic and social well being of Nigerians on a sustainable basis. The policy thrust includes taking full inventory of Nigeria's natural resources, assess level of environmental damage and degradation, as well as design and implement restoration, and rejuvenation measures aimed at halting further degradation of our environment. In accordance with the NEEDS policy thrust, environmental protection and conservation of natural resources have been scaled-up since 2004.

A Presidential Committee on Erosion Control and Desertification was set up in 2005 to oversee government's intervention programs in the States and communities with ecological problems⁴⁴. Also, a committee to produce a physical development plan for metropolitan Lagos was set up in 2005. In partnership with UNIDO, work has commenced on the Guinea Current Large Marine Ecosystem Project (GCLME): 2006-2009 and Environmental Information System. The GCLM is designed to address trans-boundary environmental problems affecting 16 countries in the guinea current region. Under the national reforestation project, some degraded areas in Abia, Cross River, Ekiti and Enugu States are being reforested with about N62 million⁴⁵.

Other achievements in the environment sector include the following institutional and policy reforms:

- National Erosion and Flood Control Policy 2004.
- National Guidelines on Erosion and Flood Control 2004
- National Erosion and Flood Control Action Plan 2005
- National Forestry Program including a Draft National Policy and National Forestry Act.
- National Environmental Sanitation Policy.
- National Environmental Sanitation Action Plan.

⁴⁴ A Presidential Committee on Erosion Control and Desertification set up in 2005 by the Nigerian government.

⁴⁵ *ibid*

- Policy Guidelines on Solid Waste Management.
- Policy Guidelines on Excreta and Sewage Management.
- Policy Guidelines on pest and Vector Control.

The above policies are aimed at pursuing and shaping the Environmental sustainability agenda of the entire Nigerian nation.

Furthermore, the following institutions have been established to assist in the quest for environmental sustainability of Nigeria:

- National Council on Shelterbelt, Aforestation, Erosion and Coastal Zone Management.
- National Oil Spillage and Response Agency (NOSDRA) 2004. This Agency is to effectively respond to the regimes of environmental problems in the oil-producing areas.
- Drafted the National Poverty-Environmental Sustainability Indicators.
- Nigerian Solid Minerals Act (2006), which contains specific sections on environmental mainstreaming and sustainability strategies.

3.10 The Niger Delta Development Commission (NDDC)

The genesis of the NDDC is largely a response to the demands of the population of the Niger Delta region, a populous area inhabited by a diversity of minority ethnic groups for greater resource ownership and benefits from the oil proceeds. During the 1990s these ethnic groups, most notably the Ijaw and the Ogoni established organizations to confront the Nigerian government and multinational oil companies like Shell.

The minorities of the Niger Delta have continued to agitate and articulate demands for greater autonomy and control of the area's petroleum resources⁴⁶. Their grievances are justified by the extensive environmental degradation and pollution from oil activities that have operated in the region since the late 1950s. However, the minority communities of oil producing areas have received little or no currency from the multi-billion dollar a year industry, which lines the pockets of foreign multinationals and corrupt government officials; environmental remediation measures are limited and negligible. The region is highly underdeveloped and is one poor even by Nigeria's low standards for quality of life.

⁴⁶ Establishment of the Niger Delta Development Commission by the NDDC Act of 2000. This was passed into law by the National Assembly in 2000.

The circumstances eventually precipitated active and sometimes violent confrontation with the state and oil companies, as well as with other communities. As a result, oil production has been hamstrung as disaffected youth or organizations deliberately disrupt oil operations in attempts to effect change. These disruptions have been extremely costly to the Nigerian oil industry, and both the multinationals and the federal government have stake in permitting uninterrupted extraction operations; the NDDC is a result of these concerns and is an attempt to satisfy the demands of the delta's restive population.

The NDDC Act of 2000 established a governing board for the commission, appointed by the president, and consisting of a chairperson, representatives of each of nine "oil producing" states, representatives of three other states, a representative of the oil companies, and representatives of various federal government departments. A managing director runs the commission on a day-to-day basis. The commission is charged with a wide range of tasks, in particular, to: *conceive, plan and implement, in accordance with set rules and regulations, projects and programs for the sustainable development of the Niger Delta area in the field of transportation, including roads, jetties and waterways, health, education, employment, industrialization, agriculture and fisheries, housing, and urban development, water supply, electricity and telecommunications (NDDC Act, 2000).*

3.10.1 Funding of the Commission

The commission is funded by a combination of contributions from the federal government and oil companies in the following manner:

- 15 percent of the allocations due to the member states of the commission under the "derivation principle" of revenue allocation;
- 3 percent of the total annual budget of any oil company operating in the Niger Delta; and
- 50 percent of funds due to the member states from the ecological fund, a separate federal fund set up for the remedy of ecological problems caused by oil production.

The commission has repeatedly complained, however, that these funds are not paid to it, thereby challenging both the government and the oil companies to pay up in full. Under

the legislation establishing it, the NDDC must "have regard to the varied and specific contributions of each Member State of the Commission to the total national production of oil and gas." The commission has developed its own formula for the allocation of projects, with 60 percent of funds to be spent based on oil production from each state (NDDC Act, 2000).

The NDDC began operations early in 2001. The budget for 2001 submitted by the former President to the National Assembly in October proposed a N15.77 billion (U.S. \$121 million) allocation for its work. The NDDC proposed a budget of about N40 billion (\$307 million) for development projects during 2002-though by March 2002 only N17 billion (\$130 million) of this was approved by the National Assembly, and announced 641 projects spread across the nine member states (NDDC, 2003). These projects cover different sectors, including infrastructure, electrification, water schemes, health, education, environmental protection, industrialization. The NDDC in conjunction with the German Development Agency Gesellschaft für Technische Zusammenarbeit (GTZ) has developed a "master plan" for the development of the Niger Delta region. The NDDC has also taken over projects that belonged to its predecessor, the Oil Mineral Producing Areas Development Commission (OMPADEC), and initiated an "interim action plan" for immediate projects.

The World Bank is preparing to make a US\$40 million loan to the NDDC for institutional support, strengthening the commission's internal and external communications, and strengthening the capacity of nongovernmental and community-based organizations working in the Niger Delta to engage with the NDDC and other development agencies. The U.N. Development Program (UNDP) is also providing technical and advisory supports to the commission, and had organized some conferences on development issues in the Niger Delta on different occasions.

3.11 Policy Implications of the Various Programs

These lofty programs discussed above pose a fundamental policy challenge for the government of Nigeria concerning the development of the Niger Delta region. It requires both policy reorientation and strategic thinking to construct a consensual basis that will ensure that citizens and corporations fully understand the concepts and implications of corporate social responsibility and sustainable development, while grappling with the dynamics of economic growth. Growth will have to be measured and not arbitrarily as is

the current policy of governments and (oil) corporations operating in the Niger Delta. The value of economic growth in the context of sustainable development will depend on our capability to produce, for example, an environmentally friendly alternative source of energy to petroleum.

While "there is considerable scope for substitution among resources" the main issue "is not whether a particular natural resource will be available indefinitely, but whether human ingenuity can keep combining man-made, natural and human capital in ways that enable" us to meet the needs of society (Hawken, et al, 1999). In crafting a response to the challenges of sustainable development, policy analysts and decision makers are increasingly confronted with the imperative of environmental justice. The government needs to address the fundamental issues concerning the Niger Delta, especially on how to balance the inequities of sustainability in the region. The inherent linkage between a government's environmental agenda and its economic agenda should define the content and strategic approach of its policy on sustainable development.

While the objective of such a policy will be to enhance the development of the society, without compromising the integrity of the environment, it must demonstrate an inbuilt and well defined mechanism on how to balance social, economic and environmental considerations. The success of such a policy depends on the significant considerations given to the social elements of sustainable development. Therefore, how do we resolve the "distributional inequities in the exposure to environmental risks"⁴⁷, in an integrative approach to sustainable development? This is a vital question which begs for government's intervention. To do so would require concrete policy actions to correspond with government's commitment on sustainable development. It is dangerous for government policies to lay more emphasis on the economic dimension, and less on the social and environmental dimensions of sustainable development.

⁴⁷ Harm van der Wal and Klaas Jan Moning, "Environmental Policy and the Social Dimension of Sustainable Development", p. 19.

Chapter Four

Environmental Degradation in the Niger Delta Region of Nigeria

The Niger Delta region has suffered environmental degradation right from the discovery of oil in the region in 1956. Oil exploration and exploitation in the region has not been of much benefit to the local communities, it rather has been a source of agony and anguish for them. Their farmlands, which were hitherto fertile and encouraged enough food production for the populace, have become highly infertile due to oil spills and gas flares. Their creeks and rivers that used to serve as their main source of protein in their diets in the form of fish, have all become covered with oil films causing accelerated fish kills. This chapter will detail the various forms of environmental degradations that have bedeviled the Niger Delta region because of oil exploration, and the impacts on their environment and its people. It shall also discuss the various laws and legislations that govern oil exploration and exploitation in Nigeria, and then examine ways environmental degradation in the Niger Delta can be solved.

4.0. Introduction

The Niger Delta is one of the world's largest wetlands, and the largest in Africa: it encompasses over 70,000 square kilometers (IUCN, 1992). It is a vast floodplain built up by the accumulation of centuries of silt washed down the Niger and Benue Rivers, composed of four main ecological zones—coastal barrier islands, mangroves, fresh water swamp forests, and lowland rainforests—whose boundaries vary according to the patterns of seasonal flooding. The mangrove forest of Nigeria is the third largest in the world and the largest in Africa; over 60 percent of this mangrove, or 6,000 square kilometers, is found in the Niger Delta. The freshwater swamp forests of the delta reach 11,700 square kilometers and are the most extensive in west and central Africa.⁴⁸ The Niger Delta region has the high biodiversity characteristic of extensive swamp and forest areas, with many unique species of plants and animals.

⁴⁸ Good quality independent information on the environment of the Niger Delta is surprisingly hard to come by; but see World Bank, *Defining an Environmental Strategy for the Niger Delta* (Washington DC: World Bank, May 1995); David Moffat and Olof Lindén, "Perception and Reality: Assessing Priorities for Sustainable Development in the Niger River Delta," *Ambio (A Journal of the Human Environment)*, vol. 24, no.7-8, December 1995 (Stockholm: Royal Swedish Academy of Sciences, 1995), an article based on the research carried out for the World Bank report; and Nick Ashton Jones, *The ERA Handbook to the Niger Delta: The Human Ecosystems of the Niger Delta* (London and Benin City: Environmental Rights Action, 1998).

The high rainfall in southern Nigeria in the rainy season leads to regular inundation of the low, poorly drained terrain of the Niger Delta, and an ecosystem characterized by the ebb and flow of water (NDES, 1997). Over the last few decades, however, the building of dams along the Niger and Benue Rivers and their tributaries has significantly reduced sedimentation and seasonal flooding in the delta. Coupled with riverbank and coastal erosion, it is estimated that, if it continued at a constant rate, the result of diminished siltation in the delta would be the loss of about 40 percent of the inhabited land in the delta within thirty years.⁴⁹ At the same time, since the construction of the dams, large numbers of people have settled in areas previously subject to extensive flooding; yet the progressive silting of the dams themselves, due to lack of maintenance, has meant that floods have begun to return to pre-dam levels, periodically inundating newly inhabited and cultivated areas.

Nigeria's mangrove forest is still relatively intact: an estimated 5 to 10 percent has been lost because of settlement or oil activities.⁵⁰ Freshwater swamp forests and forests on the barrier islands at the seaward edge of the delta are threatened by commercial logging, agriculture and settlements, but are still extensive. The lowland rainforest, on the other hand, has virtually gone: the zone previously occupied about 7,400 square kilometers of the Niger Delta, but most of this has been cleared due to oil exploration and exploitation. The attendant oil spillage and gas flaring in the Niger Delta have contributed immensely to the environmental degradation of the region.

Sources of Data for this Chapter

The data for this chapter was collected from the following four main sources: i) from relevant literatures; ii) from questionnaires distributed in the local communities of the Niger Delta; iii) from the structured interviews with some management staff of the oil companies operating in the region; and iv) from personal observation of the researcher (author).

Part C of the questionnaire covers the issues discussed in this chapter. This part of the questionnaire addresses the environmental concerns in the Niger Delta region. The following environmentally concerned questions were asked, and discussed in this chapter:

⁴⁹ It is estimated that around 70 percent of the sediment load of the rivers has been lost because of the dams. Moffat and Linden, "Perception and Reality," pp.528-9.

⁵⁰ Moffat and Linden, "Perception and Reality," p.530.

- i) Would you please list the companies operating within (the boundaries of) your community?
- ii) According to your knowledge, are there gas flares in your community?
- iii) According to your knowledge, have there been any oil spills in your community in the last one year?
- iv) If your answer above is “yes”, has clean up been carried out?
- v) Do you think there are negative impacts on the livelihood of your community arising from the activities of oil companies operating therein?

4.1 Results and Discussion

4.1.1 International Oil Companies in Nigeria

There are eighteen international oil companies operating in the country. Some of them are new entrants who have an interest in the deep offshore blocks in partnership with other operators. The oil majors account for about 99% of crude oil production in Nigeria.

Table 5: The International Oil Companies Operating in Nigeria, and When They Were Established

Company	Year established in Nigeria
Shell Petroleum Development Company Ltd	1937
Mobil Producing Nigeria Unlimited	1955
Chevron Nigeria Ltd	1961
Texaco Overseas Nig. Petroleum Co. Unltd	1961
Elf Petroleum Nigeria Limited	1962
Philip (1964); Pan Ocean Oil Corporation	1972
Ashland Oil Nigeria Limited	1973
Agip Energy & Natural Resources	1979
Statoil/BP Alliance	1992
Esso Exploration & Production Nig. Ltd.	1992
Texaco Outer Shelf Nigeria Limited	1992
Shell Nig. Exploration & Production Co.	1992
Total (Nig.) Exploration & Prod. Co. Ltd.	1992
Amoco Corporation	1992
Chevron Exploration & Production Co.	1992
Conoco	1992
Abacan	1992

(Source: Nigerian National Petroleum Corporation)

All of the international oil companies (in Table 5 above) operate within the vicinity of the local communities in the Niger Delta region of Nigeria.

4.1.2 Joint Ventures Agreements

In a Nigerian petroleum joint venture, two or more oil companies enter into an agreement for joint development of jointly held oil prospecting licenses or oil mining leases (OMLs) and facilities. Each partner in the joint venture contributes to the costs and shares the benefits or losses of the operations in accordance with its proportionate equity interest in the venture.

Table 6: Multinational Oil Companies Operating in the Niger Delta Region of Nigeria and Their Oil Mineral Leases

	Partners	Equity Interest (%)	Operator	No. of OMLs
1	Shell Agip Elf NNPC	30 5 10 55	Shell	58
2	Mobil NNPC	40 60	Mobil	4
3	Chevron NNPC	40 60	Chevron	16
4	Agip Philips NNPC	20 20 60	Agip	N/A
5	Elf NNPC	40 60	Elf	14
6	Texaco Chevron NNPC	20 20 60	Texaco	6
7	Pan Ocean	40 60	Pan Ocean	1

(Source: Nigerian National Petroleum Corporation)

Each joint venture (JV) operates under Operating Agreement (OA) with the NNPC and a Memorandum of Understanding (MOU) with the Federal Government. The OA defines relationships regarding:

- Operatorship and obligations;
- Work program, plans and expenditure;
- Authority of operating (management) committee and its sub-committees (exploration, technical, finance, services, engineering, production, and public affairs);

- Right of assignment by either party;
- Off take, scheduling and lifting procedures;
- Accounting procedures;
- Project, contract procedures; and
- Communication procedures.

NNPC operates seven joint venture partnerships with companies, equities and details as listed in Table 6 above. Six operators of the seven joint venture partners with NNPC (Shell, Mobil, Chevron, Agip, Elf and Texaco) produce about 97% of Nigeria's crude oil.

4.3 Oil Spill Incidents in the Niger Delta Region

The Niger Delta environment has been characterized as polluted due to unbridled activities of the oil companies operating without much consideration to the fragile environment of the region. Oil spillage is categorized into four groups: minor, medium, major and disaster. Minor spill takes place when the oil discharge is less than 25 barrels in inland waters or less than 250 barrels on land, offshore or coastal waters that does not pose a threat to the public health or welfare. In the case of the medium, the spill must be 250 barrels or less in the inland water or 250 to 2,500 barrels on land, offshore and coastal water while for the major spill, the discharge to the inland waters is in excess of 250 barrels on land, offshore or coastal waters (DPR, 1991).

The disaster refers to any uncontrolled well blowout, pipeline rupture or storage tank failure which poses an imminent threat to the public health or welfare (Ntukekpo, 1996). Figure 12 below shows the network of Shell's pipelines in the various locations it operates in the Niger Delta region.



Figure 12: Map Showing Shell Pipelines in the Niger Delta (Shell Annual Report, 2002)

According to one of the respondents of the questionnaires *“we have many of Shell’s crude oil pipelines passing through our compounds and farmlands in this community, last year there was oil spill in one of our farmlands but it was cleaned up immediately, but we cannot farm on that land again because nothing can grow there again even weeds”*. The respondent’s claim of crude oil pipelines passing through people’s compounds and farmlands was confirmed by the author during the distribution of the questionnaires in the communities, the author’s observations were captured in the photographs in figures 13 and 14 below. These pipelines were not protected in any form, incase of eventualities, and this leaves people in these local communities vulnerable to pipeline disasters that could occur at anytime.

Oil spillage in Nigeria occurs because of sabotage, corrosion of pipes and storage tanks, carelessness during oil production operations and oil tankers accidents. In Nigeria, fifty percent (50%) of oil spills is due to corrosion, twenty eight percent (28%) to sabotage and twenty one percent (21%) to oil production operations (DPR, 1999). One percent (1%) of oil spills is due to engineering drills, inability to effectively control oil wells, failure of machines, and inadequate care in loading and unloading oil vessels (Nwilo and Badejo, 2005).



Figure 13: A Polluted Water Body and Farmland by Oil Spillage in Ogoni Land in the Niger Delta.

Most of the oil pipes and tanks in the country are very old and lack regular inspection and maintenance. Thousands of barrels of oil have poured into the environment through some of the corroded pipes and tanks (DPR, 1999). A recent major occurrence was that at Idoho, an offshore platform in southeastern Nigeria, where about 40,000 barrels of oil spilled into the environment (DPR, 1999). Sabotage is another major cause of oil spillage in the country. Some of the inhabitants of the oil rich Niger Delta engage in oil bunkering and from time to time damage and destroy oil pipelines in their efforts to collect oil from

them. SPDC claimed in 1996 that sabotage accounted for more than 60 per cent of all oil spilled at its facilities in Nigeria, stating that the percentage has increased over the years both because the number of sabotage incidents has increased and because spills due to corrosion have decreased with programs to replace old oil pipelines (SPDC, 1996).

Pirates are stealing Nigeria's crude oil at a phenomenal rate, funneling nearly 300,000 barrels per day from our oil and selling it illegally on the international market. Nigeria lost about N7.7 billion in 2002 because of vandalisation of pipelines carrying petroleum products. The amount, according to the PPMC a subsidiary of NNPC represents the estimated value of the products lost in the process (Nwilo and Badejo, 2005).

Illegal fuel siphoning because of the thriving black market for petroleum products has increased the number of oil pipeline explosions in recent years. In July 2000, a pipeline explosion outside the city of Warri caused the death of 250 people. An explosion in Lagos in December 2000 killed at least 60 people. The NNPC reported 800 cases of pipeline vandalization from January through October 2000. In January 2001, Nigeria lost about \$4 billion in oil revenues due to the activities of vandals on oil installations (Nigeria Country Analysis Brief, 2005). The government estimates that as much as 300,000 bbl/d of Nigerian crude is illegally bunkered out of the country.



Figure 14: Old and Exposed Pipelines Crossing Communities and Farmlands in Niger Delta.

Oil spill incidents have occurred in various parts and at different times along our coast. Between 1976 and 1998, a total of 5724 incidents resulted in the spill of approximately 2,571,113.90 barrels of oil into the environment (DPR, 1999). Some major spills in the coastal zone are the GOCON's Escravos spill in 1978 of about 300,000 barrels, Shell

Petroleum Development Corporation's (SPDC's) Forcados Terminal tank failure in 1978 of about 580,000 barrels, Texaco Funiwa-5 blow out in 1980 of about 400,000 barrels, and the Abudu pipe line spill in 1982 of about 18,818 barrels (NDES, 1997).

Other major oil spill incidents are the Jesse fire incident, which claimed about a thousand lives and the Idoho Oil spill in January 1998, in which about 40,000 barrels were spilled into the environment (Nwilo and Badejo, 2005). The most publicized of all oil spills in Nigeria occurred on January 17 1980 when 37.0 million liters of crude oil were spilled into the environment. This spill occurred because of a blow out at Funiwa 5 offshore station. The heaviest recorded yearly spill so far occurred in 1979 and 1980 with a net volume of 694,117.13 barrels and 600,511.02 barrels respectively.

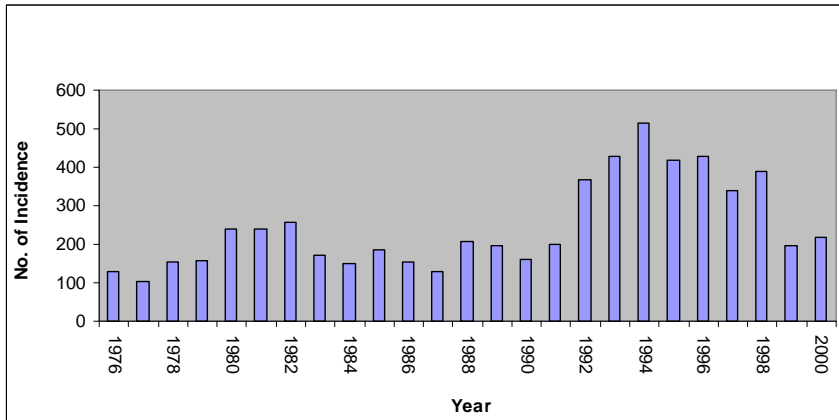


Figure 15: Incidence of Oil Spill in the Niger Delta from 1976-2000

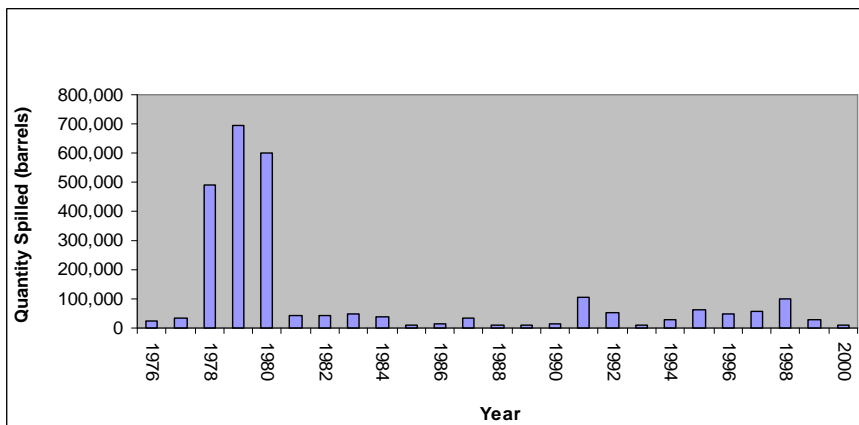


Figure 16: Quantity of Crude Oil Spilled (Barrels) from 1976-2000

Oil Spill incidents in the country between 1976 and 2000 are shown in table 7 below. Figure 15 above also shows the graph of the number of oil spill incidents per year in the

country. The graph clearly indicates that the lowest oil spill incidents occurred in 1977, while the highest number of oil spill incident happened in 1994. While Figure 16 and table 7 show the quantity of oil spilled per year in the country. The lowest quantity of oil was spilled in 1989, while the highest quantity was spilled in 1979.

According to the Department of Petroleum Resources (DPR), between 1976 and 1996 a total of 4647 incidents resulted in the spill of approximately 2,369,470 barrels of oil into the environment. Of this quantity, an estimated 1,820,410.5 barrels (77%) were lost to the environment, while a total of 549,060 barrels of oil representing 23.17% of the total oil spilt into the environment was recovered.

Table 7: Oil Spill Data (1976 – 2000)

Year	Number of Spill Incidents	Quantity spilled (barrels)
1976	128	26,157.00
1977	104	32,879.25
1978	154	489,294.75
1979	157	694,117.13
1980	241	600,511.02
1981	238	42,722.50
1982	257	42,841.00
1983	173	48,351.30
1984	151	40,209.00
1985	187	11,876.60
1986	155	12,905.00
1987	129	31,866.00
1988	208	9,172.00
1989	195	7,628.161
1990	160	14,940.816
1991	201	106,827.98
1992	367	51,131.91
1993	428	9,752.22
1994	515	30,282.67
1995	417	63,677.17
1996	430	46,353.12
1997	339	59,272.30
1998	390	98345.00
1999	198	29,337
2000	219	11,542
Total	6141	2,611,993

(Source: DPR, 2007)

Available records for the period of 1976 to 1996 indicate that approximately 6%, 25%, and 69% respectively of the total oil spilled in the Niger Delta region were in land,

swamp and offshore environments. Also between 1997 and 2001, Nigeria recorded a total number of 2,097 oil spill incidents.

4.4 Gas Flaring in the Niger Delta Region

Gas flaring is a constant phenomenon in the Niger Delta (see figures 18 & 19 below). Gas flaring occurs in all oil exploration locations, meaning that it takes place in all the Nine States of the Niger Delta (see Figure 17 below). The gas released when crude oil is brought to the surface is known as associated gas. Drilling companies routinely flare or vent this material for safety reasons or where no infrastructure exists to bring it to market. This practice has been dramatically curbed in developed countries, partly because of the recent rise in natural gas prices. However, the World Bank estimates show that more than 100 billion cubic meters of gas is still flared or vented worldwide annually.

More gas is flared in Nigeria than anywhere in the world (EIA, 2003). The statistics publisher in the gas industry, Cedigaz, indicates that Nigeria accounted for 17.2% of global flaring in 2001, more than the second (Iran) and third (Indonesia) countries combined (Statistical Leaflet available here: www.cedigaz.org accessed July 11, 2007).

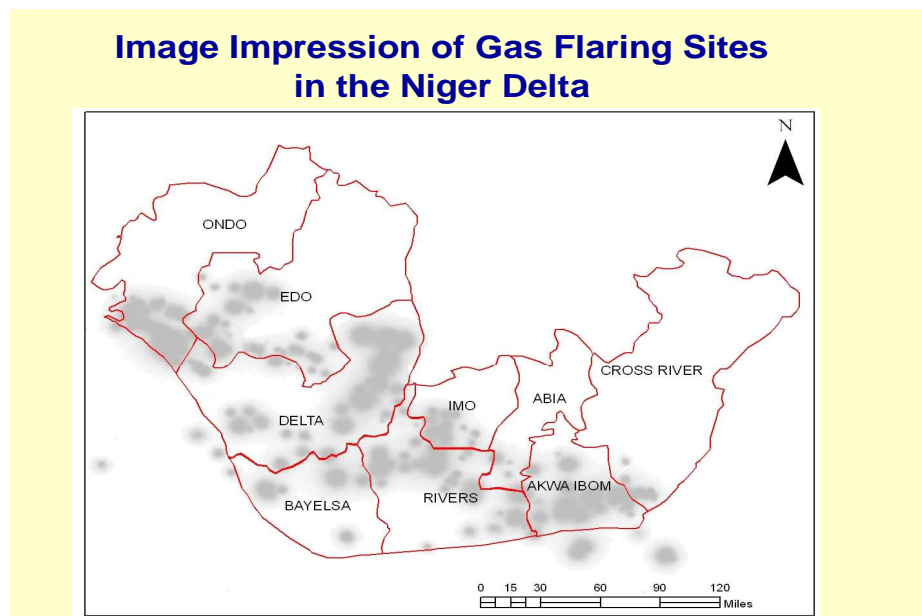


Figure 17: Map of the Niger Delta Region Showing Locations of Gas Flaring (Source: NDDC, 2003)

The UNDP/World Bank in 2004 estimated Nigerian flaring at close to 2.5 billion cubic feet daily (over 70 million cubic meters daily), amounting to about 70 million tonnes of carbon dioxide (UNDP/World Bank, 2004). Approximately 75 percent of total gas production in Nigeria is flared, and about 95 percent of the “associated gas” which is

produced as a by-product of crude oil extraction from reservoirs in which oil and gas are mixed (Khan, 1996). About half of this gas is flared by SPDC (see Figure 18 below), in line with its share of oil production. Flaring in Nigeria contributes a measurable percentage of the world's total emissions of greenhouse gases; due to the low efficiency of many of the flares much of the gas is released as methane (which has a high warming potential), rather than carbon dioxide.⁵¹ At the same time, the low-lying Niger Delta is particularly vulnerable to the potential effects of sea levels rising.



Figure 18: Gas Flaring in Farmlands in Rumuekpe, Rivers State.

Eight countries—Algeria, Angola, Indonesia, Iran, Mexico, Nigeria, Russia, and Venezuela—account for 60% of flaring and venting worldwide, according to World Bank estimates. In fact, Nigeria (17.2%), Russia (11.5%), and Iran (10.5%) alone are responsible for more than one third of global flaring and venting (see figure 19 below). In contrast, the United States flares or vents about 0.4% of its production, according to the GAO report; this represents about 3% of the global total.

⁵¹ The World Bank estimates that Nigerian gas flaring releases some 35 million tonnes of carbon dioxide annually. This represents 0.2 percent of total global man-made carbon dioxide emissions; of which the rest of Africa contributes 2.8 percent; Europe 14.8 percent; the USA 21.8 percent; and the rest of the world 60.4 percent. SPDC, *Nigeria Brief: Harnessing Gas*. See also World Bank, *Defining an Environmental Strategy for the Niger Delta*, and Moffat and Linden, "Perception and Reality."

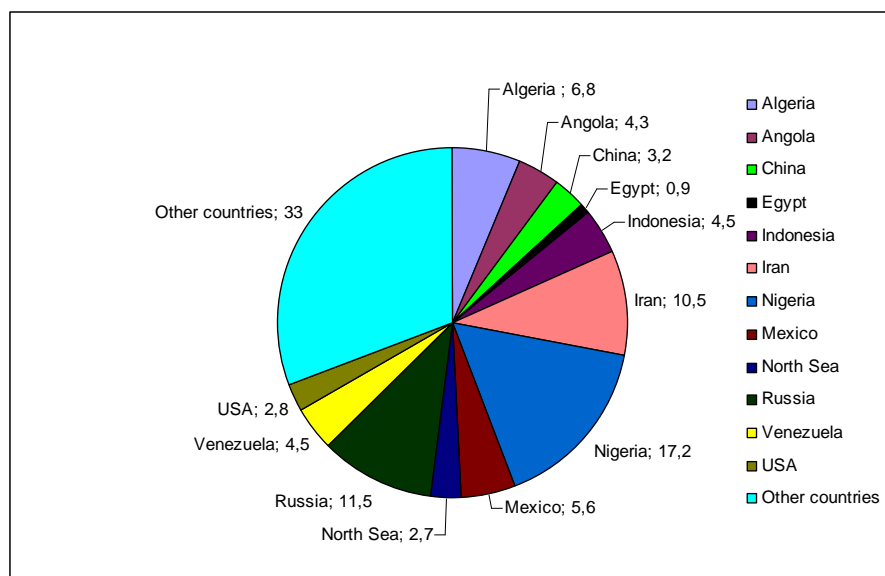


Figure 19: Percentage of Flared Gas.

4.4.1 Environmental and Health Impacts of Gas Flaring in Nigeria

Many communities in the Niger Delta believe that local gas flares cause acid rain, which corrodes the metal sheets used for roofing. According to Shell internal documentation, due to the low content of sulphur dioxide and nitrous oxide in the gas, it is unlikely that flaring in fact contributes to acid rain, and various studies by different consultants have failed to prove a link (SPDC, PAGE Fact Book, 1993). One study of flares in the Niger Delta found that air, leaf and soil temperatures were increased up to eighty or one hundred meters from the stack, and species composition of vegetation was affected in the same area.

However, in one case, at Utapete flow station, on the Atlantic coast near Iko village, Akwa Ibom State, a flare was sited too low, so that seawater flooded the flare pipe at high tide, vaporizing the salt and shooting it over the village. Corrosion of the roofs in Iko was shown to be faster than in other areas. In 1995, SPDC closed the flare pit at Utapete, shortly after local environmentalists issued a report on its effects⁵². In other cases, inefficient technology in the flares means that many of them burn without sufficient oxygen or with small amounts of oil mixed in with the gas, creating soot that is deposited on nearby land and buildings, visibly damaging the vegetation near to the flare.

⁵² Environmental Rights Action report on the activities of Shell in the communities of the Niger Delta and the closure of her flare pit at Utapete in 1995.

Table 8: Best Estimate of Gas Flaring Trends in Selected Countries in 2000 (EIA, 2003)

Country	Flared Gas (%)	Share of world total (%)	Ratio of gas flared to Oil produced	
			1990	2000
Algeria	6.8	6	79	101
Angola	4.3	4	n/a	118
China	3.2	3	n/a	74
Egypt	0.9	1	37	23
Indonesia	4.5	4	66	66
Iran	10.5	10	70	56
Nigeria	17.2	16	250	166
Mexico	5.6	5	n/a	33
North Sea	2.7	3	18	9
Russia	11.5	11	n/a	77
Venezuela	4.5	4	30	27
United States	2.8	3	10	22
Other countries	33	30	-	-
World	107.5	100	-	-

Respiratory problems among children as a result are reported (Human Rights Watch, 1997). The most noticeable effect of the flares is light pollution: across the oil producing regions, flares, which, in the rainy season, reflect luridly from the clouds, light up the night sky. Villagers close to flares complain that nocturnal animals are disturbed by this light, and leave the area, making hunting more difficult.

In some cases, gas flares are very close to communities. Shell claims that this is usually because settlements have grown up around the oil facilities; local communities dispute this claim. In any event, the flares are rarely if ever relocated, or even made safe by providing secure fencing. In July 1997, Human Rights Watch observed women climbing right into the bounded (walled) pit where a flare was burning, to spread out cassava for drying on the earth close to the flame. A malfunction in the flare or missed footing could have fatal consequences; it is also likely that the soot from the flare would contaminate the cassava.

The cocktail of toxic substances which has been emitted in the flares for over 40 years, including benzene and particulates, has exposed Niger Delta communities to health risks and property damage, in violation of their human rights. The flares affect their livelihood and expose them to an increased risk of premature deaths, child respiratory illnesses, asthma and cancer, as well as acid rain. For example, conservative assumptions using

World Bank information on the adverse effect of particulates, suggests that gas flaring from just one part of the Niger Delta (Bayelsa State) would likely cause annually 49 premature deaths, 4,960 respiratory illnesses among children and 120, asthma attacks (World Bank, 1995).

This exposure (see figure 20 below) violates Nigerian constitutional provision, for example, of the fundamental rights to life (Article 33) and to human dignity (Article 34). It also violates the rights guaranteed in the African Charter on Human and Peoples' Rights, for example, of every individual to enjoy the best attainable state of physical and mental health (Article 16) and of all peoples to a general satisfactory environment favourable to their development (Article 24).



Figure 20: View of Agip Gas Flares at Ebocha, Niger Delta (Environmental Rights Action, 2004)

According to the World Bank (2003), gas flaring in Nigeria "has contributed more greenhouse gas emissions than all other sources in sub-Saharan Africa combined". The UNDP/World Bank figure of 70 million tonnes of carbon dioxide would have made Nigeria the world's 42nd biggest emitter of carbon dioxide from fossil fuel and cement manufacture in 2000, ahead of Portugal, Switzerland, Sweden and Norway. This ranking is obtained from the World Resources Institute's Climate Analysis Indicators Tool, (available here: <http://cait.wri.org> accessed July 11, 2007).

4.4.2 The Cost of Gas Flaring in the Niger Delta

The annual financial loss to Nigeria from gas flared in the Niger Delta has been put at about US \$2.5 billion. Flaring represents a significant economic loss (lost opportunity value estimated at some US\$2.5 billion, based on LNG values (UNDP/World Bank, 2004). At the same time, about two-thirds of the population is estimated by the World Bank to live on less than US \$1 a day. According to World Bank Country Briefing (2005), the GNP per capita, at about US\$320, is below the level at independence forty years ago and below the US\$370 that it gained in 1985. About 66 percent of the population now falls below the poverty line of roughly one U.S. dollar a day, compared to 43 percent in 1985.

4.4.3 Stopping Gas Flaring in Nigeria

In 1969, Nigerian legislation required oil companies to set up facilities to use the “associated gas” from their operations within five years of commencement of production. In 1979, further legislation set a time limit of April 1980 for companies to develop gas utilization projects or face fines.⁵³ However, without any gas utilization projects of its own, the government could not credibly enforce this legislation. After Oil company lobbying, limited exemptions to this rule were granted in 1985, by an amendment and regulations, which allowed flaring in certain cases; but in any event, the costs to the operating companies of ceasing flaring far outweighed the fines imposed (Associated Gas Re-injection regulation, 1985). Fines for gas flaring were raised in January 1998 from 0.5 to 10 Naira (U.S.11¢) for every 1,000 standard cubic feet of gas.⁵⁴

In 1996, SPDC committed itself to the elimination of gas flaring at its facilities by 2008 (SPDC Annual Report, 1996). In October 1996, Shell announced that it had awarded a U.S.\$500 million contract for a new gas processing plant at Soku, Rivers State, which would supply the LNG plant at Bonny with a mixture of associated and non-associated gas. Together with two other gas facilities, at Odidi and Alscon, SPDC intends to collect 380 million standard cubic feet per day (scf/d) of associated gas, more than one third of

⁵³ Petroleum (Drilling and Production) Regulations, Regulation 42 (which came into force in November 1969), and the Associated Gas Reinjection Act, Cap.26, *Laws of the Federation of Nigeria*, 1990 (which came into force in 1979).

⁵⁴ Reuters, November 19, 1996.

the volume of gas currently flared by the company, before the end of the century⁵⁵. Chevron's Escravos gas project, the first phase of which began exporting in September 1997, is intended to reduce flaring by 40 percent from its facilities⁵⁶. Mobil's Bonny facility, which came on stream in July 1998 producing 50,000 bpd of LNG, collects associated gas and will reduce flaring from its Oso field. With the construction of the West African Gas Pipeline from Lagos, Nigeria, most of the gas produced during oil exploration would be tapped, channeled and sold to other West African countries through the gas pipeline. This would help reduce the gas flaring phenomenon in the Niger Delta region.

In spite of efforts by countries and companies to capture more of this gas for energy use, global flaring and venting levels have remained constant over the past 20 years, World Bank statistics show. Increased oil production and the corresponding rise in associated gas production, as well as a lack of stakeholder collaboration among industries, governments, and consumers, have offset any reductions, (Broekhuijsen, 2004). The economic incentives to flare or vent no longer exist because of methane's value in the marketplace, says Russell Jones, an economist with the American Petroleum Institute. Too often, "there are no pipelines or markets for it because societies aren't set up to use it."

Part of the problem has been that historically oil and gas companies have developed production while others have built the pipelines and refineries, Jones explains. This is slowly changing, with help from the World Bank initiative, he says, citing a ChevronTexaco project in Africa as an example of a company building the gas pipeline. Another solution could be to liquefy the gas and pump it through existing oil pipelines, (Broekhuijsen, 2004). "That would address the transport problem, but this technology is still under development and very expensive," he says. "Sometimes, it's not a matter of technology but rather pure cost." For example, although Algeria has worked hard to reduce flaring and venting, it still occurs at locations deep in the desert where no local markets exist and there is no way to bring the gas to the coast. "You need fairly large quantities to pay for that infrastructure," Broekhuijsen explains.

⁵⁵ SPDC Press Release, October 18, 1996

⁵⁶ U.S. EIA, "Nigeria Country Analysis Brief."

The World Bank program focuses on ways to commercialize associated gas, including developing domestic markets and access to international markets, creating legal and fiscal regulations for associated gas, and capacity building for the pursuit of carbon credits under the Kyoto clean development mechanism for flaring and venting reduction projects. The aim is to significantly cut venting and flaring in partnership countries over the next 5–10 years.

4.5 Impact of Oil Operations on the Niger Delta Environment and its People

Environmentally speaking, modern mining operations have been destructive. The removal of a non-renewable resource such as oil usually causes some environmental damage. For aboriginal peoples the effects on native fauna and flora, on which the subsistence component of their economy depends, are of concern. While catastrophic events such as the effects of the Exxon Valdez oil spill on wildlife of the Alaskan coast are widely published, smaller-scale problems of this type- the destruction of local fish stocks in small creeks near oil field, occur more often (Ebeku, 2005). The extraction of oil is bound to have some negative impacts on the Niger Delta environment and its people.

4.6 Environmental Degradation through Water Pollution in Nigeria

Water has numerous physical, chemical and biological uses, and it could be used most efficiently when it is in its purest form. This purity, however, is threatened by human activities. In order to avert this trend, several countries instituted minimum water quality standards. Nigeria has not been left behind in this process. The problems of water pollution are enormous. Nigeria has about 5,000 registered industrial facilities and some 10,000 small scale industries operating illegally within residential premises. In places like Kano, Kaduna, Lagos and Port Harcourt, coloured, hot and heavy metal-laden effluents especially from the textile, tannery and paints industries are discharged directly into open drains and water channels, constituting direct dangers to water users and biota downstream. Also disturbing is the practice whereby some industrial facilities bury their expired and hazardous chemical wastes in their backyard threatening the ground water quality⁵⁷.

⁵⁷ United Nations Commission on Sustainable Development, Fifth Session, 7-25 April, 1997, New York, P. 12.

Water quality standards are not lacking in the country, but despite these, the pollution and degradation of water quality continue unabated due to discharge of untreated effluent from industries, sewers, non protection of water sheds, hydrocarbon contamination of ground water, saline intrusion of ground water and irresponsible mining activities to name a few. This is aggravated by the reckless and unregulated drilling of ground water. The contamination contributes greatly to the spread of infectious diseases. It has been estimated that waterborne pathogens that contribute to typhoid, cholera, amoebic infections, bacillary dysentery, and diarrhea account for 80% of all diseases in developing countries and at least responsible for up to 90% of the 13 million child deaths each year. These trends have to be arrested to ensure sufficient quality water and high standard of living.

Table 9: Principal Health and Productivity Consequences of Water Pollution (World Development Report, 1992)⁵⁸

Environmental Problem	Effect on Health	Effect on Productivity
Water pollution and water scarcity	More than 2 million deaths and billions of illnesses such as typhoid, cholera, river blindness and guinea worm are attributable to water pollution a year: poor household hygiene and added health risks caused by water scarcity.	Declining fisheries; rural household time and municipal costs of providing safe water; aquifer depletion leading to irreversible compaction; constraint on economic activity because of water shortages. Reduction in revenue and greater production costs.
Solid and hazardous wastes	Diseases spread by rotting garbage and blocked drains; risks from hazardous wastes typically local but often acute. Contamination of sea food lead to the outbreak of hepatitis A.	Pollution of groundwater resources.

The long-term economic and social development of any country requires the effective management and use of its natural resources. A careful management of water as a resource is essential for meeting a major demand created by accelerated urbanization, industrialization and agricultural development. Water management policies supported by adequate legal and institutional framework are essential tools for the sustainable development and control of the pollution effect on the environment. Water pollution

⁵⁸ Development and the Environment (New York: Oxford University Press)

through sewage leakage, industrial waste, toxic municipal waters, gas flaring and oil spills among others, require proper control at the local, state, national and global levels for a sustainable development. Table 9 above summarizes the principal health and productivity consequences of water pollution.

Moreover, the Nigerian ecosystem has been degraded by oil spills, gas flaring and sundry activities deriving from oil exploration, production and processing as experienced in the Niger Delta area of Nigeria. Oil spillage is a major and frequent hazard to the economy of the Niger Delta.

4.7 What Do the Regulations Say about Oil Spillage and Gas Flaring in Nigeria?

Apart from human rights laws, gas flaring is generally prohibited under environmental regulations of Nigeria since 1st January 1984, unless a ministerial consent has been lawfully issued and conditions are complied with. Under section 3 of the Associated Gas Re-injection Act 1979, consent can only be issued if the Minister is satisfied that utilization or re-injection is not appropriate or feasible in a particular field or fields. If a consent is issued, the Minister is empowered to require the companies to pay a sum (reported in 2002 to be 10 Naira per million cubic feet (about 4 UK pence or 7 US cents), and under the Associated Gas Re-injection (Continued Flaring of Gas) Regulations 1984 certain conditions must be met. Despite requests by Environmental Rights Action/Friends of the Earth Nigeria, no consents or conditions have been disclosed by any of the companies.

4.7.1 Legislations Governing Gas Flaring in Nigeria

The following legislation is relevant to gas flaring and venting:

- Hydrocarbons legislation: 1969 Petroleum Act and Regulations, as amended;
- Model Petroleum Contract; Associated Gas Reinjection Act 1979;
- Associated Gas Reinjection (Continued Flaring of Gas) Regulations 1985;
- The Petroleum (Drilling and Production) Amendment Decree 1988
- Environmental legislation: Effluent Limitation Regulations 1991;
- DPR Environmental Guidelines and Standards for the Petroleum Industry 1991;
- FEPA EIA Guidelines for E&P Projects 1994, Decree No. 58/88

The above legislations have been put in place by the Nigerian government to combat the menace of gas flaring in the Niger Delta region and to assist in ensuring the

environmental sustainability of the nation. The regulating Agency is the Ministry of Petroleum Resources, through the Department of Petroleum Resources.

4.7.2 The Legal Frameworks for Oil Exploration and Environmental Decision Making in Nigeria

Nigerian law provides that “all minerals, mineral oils and natural gas” are the property of the federal government. Accordingly, the Petroleum Act requires a license to be obtained from the Ministry of Petroleum Resources before any oil operation—prospecting, exploration, drilling, production, storage, refining, or transportation is commenced. Only a Nigerian citizen or a company incorporated in Nigeria may apply for such a license.

The minister of petroleum resources has general supervisory powers over oil company activities, and may revoke a license under certain conditions, including if the operator fails to comply with “good oilfield practice.” Good oil field practice is not defined in the decree, but the Mineral Oils (Safety) Regulations of 1963, promulgated under the Mineral Oils Act (the predecessor to Petroleum Act), states that good oil field practice “shall be considered to be adequately covered by the appropriate current Institute of Petroleum Safety Codes, the American Petroleum Institute Codes, or the American Society of Mechanical Engineers Codes,” thus effectively binding oil companies to respect international standards in their operations in Nigeria. Licensees are responsible for all the actions of independent contractors carrying out work on their behalf.

4.7.3 The Laws Governing Oil Exploration and Exploitation in Nigeria

A number of laws already exist in the Nigerian oil industry. Most of these laws provide the framework for oil exploration and exploitation. However, only some of these laws provide guidelines on the issues of pollution (Salu, 1999). According to the Federal Environmental Protection Agency, Lagos Nigeria, the following relevant national laws and international agreements are in effect namely:

- Endangered Species Decree Cap 108 LFN 1990.
- Federal Environmental protection Agency Act Cap 131 LFN 1990.
- Harmful Waste Cap 165 LFN 1990.
- Petroleum (Drilling and Production) Regulations, 1969.
- Mineral Oil (Safety) Regulations, 1963.
- International Convention on the Establishment of an International Fund for Compensation for Oil Pollution Damage, 1971

- Convention on the Prevention of Marine pollution Damage, 1972
- African Convention on the Conservation of Nature and Natural Resources, 1968
- International Convention on the Establishment of an International Fund for the Compensation for Oil Pollution Damage, 1971.

References to Caps, volumes and pages are as in the laws of the Federation of Nigeria.

Some of the acts and regulations on pollution given by (Oshineye, 2000) are listed below:

- **The Mineral Oil (Safety) Regulations 1963**, that deals with safe discharge of noxious or inflammable gases and provide penalties for contravention and non-compliance.
- **Petroleum Regulations 1967** that prohibit discharge or escape of petroleum into waters within harbour area and make provisions for precautions in the conveyance of petroleum and rules for safe operation of pipelines.
- **Petroleum Drilling and Production Regulation 1969** that requires license holders to take all practical precautions, including the provision of up-to-date equipment approved by the appropriate authority to prevent pollution of inland waters, river water courses, the territorial waters of Nigeria or the high seas by oil or other fluids or substances.
- **Oil in Navigable Waters Act 1968** that prohibits discharge of oil or any mixture containing oil into the territorial or navigable inland waters.
- **Oil Terminal Dues Act 1969** that prohibits oil discharge to area of the continental shelf within which any oil terminal is situated.
- **Petroleum Refining Regulations 1974**, which deals, among other things, with construction requirements for oil storage tanks to minimize damage from leakage.
- **Associated Gas Re-Injection Act 1979** that provides for the utilization of gas produced in association with oil and for the re-injection of such associated gas not utilized in an industrial project. This is to discourage gas flaring. The Government has raised the penalty for gas flaring and this increase was due to the government's determination to protect the environment and ensure the optimal and functional use of Nigeria's gas resources.
- **Oil Pipeline Act 1956** (as amended by Oil pipelines Act 1965) which prevents the pollution of land or any waters.

4.7.4 Oil Pollution Act (OPA) of 1990

The Oil Pollution Act of 1990 (OPA 1990) is responsible for many of the nation's improvements in oil spill prevention, mitigation, cleanup and liability. The majority of OPA 1990 provisions were targeted at reducing the number of spills followed by reducing the quantity of oil spilled. OPA 1990 also created a comprehensive scheme to ensure that sufficient financial resources are available to clean up a spill and to compensate damages caused by a spill. It also ensures that the federal response system is adequately prepared to manage the impacts of oil spills that occur; and mandates that industry implement prevention and preparedness measures. The OPA also mandates that tankers and inland oil facilities develop individual response plans. Furthermore, the OPA also mandates enhancements to the national response system, and development of Area Contingency Plans.

4.7.5 National Oil Spill Detection and Response Agency (NOSDRA)

The Federal Executive Council of Nigeria has approved a National Oil Spill Detection and Response Agency. The Ministry of Environment, which initiated the Agency has also forwarded to the Federal Executive Council for approval, the reviewed draft National Oil Spill Contingency Plan (NOSCP) which the Agency would manage (Alexandra Gas and Oil Connections, 2006).

The establishment of the contingency plan and the agency complied with the International Convention on Oil Pollution Preparedness, Response and Cooperation (OPRC) to which Nigeria is a signatory. The draft bill on the NOSDRA has been forwarded to the Nigerian National Assembly for deliberation and enactment into law (Alexandra Gas and Oil Connections, 2006). Apart from intensifying efforts towards compliance monitoring and enforcement of oil and gas regulations and standards, the ministry is also mounting pressure on the oil and gas operators for a gas flare-out. Effort is also being made to ensure the use of environmentally friendly drilling fluid and mud systems.

4.8. Recommendations and Conclusion

From 1988, the Federal Environmental Protection Agency Act (Decree No. 58 of 1988) was vested with the authority to issue standards for water, air, and land qualities. The Federal Environmental Protection Agency (FEPA) is now called the Federal Ministry of Environment, and now has the responsibilities of making regulations under the decree

that established FEPA to govern environmental standards in the oil and other industries. The Department of Petroleum Resources (DPR) has also issued a set of Environmental Guidelines and Standards for the Petroleum Industry in Nigeria (1991), which overlap with and in some cases, differ from those issued by FEPA. For the most part, the specific standards set are comparable to those in force in Europe or the U.S.A.

The Federal Ministry of Environment is legally vested with the responsibility of protecting and sustaining the Nigerian environment through formulation and implementation of regulatory frameworks. The National Policy on the Environment (1989) comprises one of the instruments developed by the agency to carry out its tasks. The document describes guidelines and strategies for achieving the policy goal of sustainable development (Ntukekpo, 1996).

Oil companies operating in Nigeria are required by law to have the following obligations:

- Adopt all practicable precautions including the provision of up-to-date equipment to prevent pollution, and must take prompt steps to control and, if possible, end it, if pollution does occur;
- They must maintain all installations in good repair and condition in order to prevent the escape or avoidable waste of petroleum and to cause “as little damage as possible to the surface of the relevant area and to the trees, crops, buildings, structures and other properties thereon.”
- Oil companies are also required to comply with all local planning laws; they may not enter on any area held to be sacred or destroy any thing which is an object of veneration; and
- They must allow local inhabitants to have access, at their own risk, to roads constructed in their operating areas.

The Environmental Impact Assessment Act (Decree No. 86 of 1992) requires an environmental impact assessment (EIA) to be carried out “where the extent, nature or location of a proposed project or activity is such that it is likely to significantly affect the environment.”⁵⁹ The public and private sector are required to give “prior consideration” to the environmental effects of any activity before it is embarked upon. An EIA is

⁵⁹ Environmental Impact Assessment Decree, section 2(2). Prior to the EIA Decree of 1992, certain similar requirements applied under the Petroleum Act and other legislation, such as the requirement under the Petroleum (Drilling and Production) Regulations to draw up an “oil field development programme,” approved by the Director of Petroleum Resources, which should point out potential dangers to the environment and the appropriate solutions.

compulsory in certain cases, including oil and gas fields' development and construction of oil refineries, some pipelines, and processing and storage facilities. The carrying out of EIAs is supervised by the Federal Environmental Protection Agency (now Federal Ministry of Environment), and by state environmental protection agencies.

As with the rest of the regulatory framework governing protection of the environment in Nigeria, there is in practice little enforcement of the requirements to carry out EIAs, either by FEPA or by the DPR's regulatory arm, the Petroleum Inspectorate, and virtually no quality control over the assessments carried out. As one study concluded: "Most states and local government institutions involved in environmental resource management lack funding, trained staff, technical expertise, adequate information, analytical capability and other pre-requisites for implementing comprehensive policies and programs. In the case of the oil industry, overlapping mandates and jurisdiction between FEPA and the DPR frequently contribute to counterproductive competition."

To ensure environmental sustainability of the Niger Delta region, and Nigeria as whole, government should as a matter of urgency increase its budgetary allocations to the environmental sector of the economy. The funds should be invested in capacity building, trainings and acquisition of laboratory equipments for the Environmental Ministries and Agencies in the country. The government should also ensure strict compliance to the environmental laws of Nigeria by the oil companies and allied companies operating in the country.

Chapter Five

The Local Economy of the Niger Delta Region and its Economic Sustainability Potentials

The agitations of this region for the equitable distribution of the oil wealth that comes from its soil cannot continue to be ignored. More than 95 per cent of the oil exported from Nigeria comes from the Niger Delta region, it is therefore known as the oil base of Nigeria. It is a notorious fact that the Nigerian economy is based on the oil wealth that comes from the Niger Delta region. On the local level, this region's economy is largely based on subsistent fishing and farming activities. This chapter will therefore give a brief introduction of poverty in Nigeria; explore all the sources that enhance the economy of the Niger Delta region; discuss the endemic poverty level in the region; the human development index of Nigeria; and offer suggestions for economic emancipation of the local inhabitants of the region.

5.0 Introduction

Nigeria, which was one of the richest 50 countries in the early 1970s, has retrogressed to become one of the 25 poorest countries at the threshold of the twenty first century (Igbuzor, 2006). It is ironic that Nigeria is the sixth largest exporter of oil and at the same time host the third largest number of poor people after China and India. Statistics show that the incidence of poverty using the rate of US \$1 per day increased from 28.1 percent in 1980 to 46.3 percent in 1985 and declined to 42.7 percent in 1992 but increased again to 65.6 percent in 1996. The incidence increased to 69.2 percent in 1997. The 2004 report by the national Planning Commission indicates that poverty has decreased to 54.4 percent. Nigeria fares very poorly in all development indices.

The average annual percentage growth of GDP in Nigeria from 1990 - 2000 was 2.4. This is very poor when compared to Ghana (4.3) and Egypt (4.6). Poverty in Nigeria is in the midst of plenty. Nigeria is among the 20 countries in the world with the widest gap between the rich and the poor. The Gini index measures the extent to which the distribution of income (or in some cases consumption expenditure) among individuals or households within an economy deviates from a perfectly equal distribution. The Gini index for Nigeria is 50.6. This compares poorly with other countries such as India (37.8), Jamaica (37.9), Mauritania (37.3) and Rwanda (28.9).

Box 3: Gini Index

A Gini index of zero represents perfect equality while an index of 100 implies perfect inequality. Nigeria has one of the highest Gini index in the world.

In order to address the problem of poverty and promote sustainable development, the United Nations Millennium Declaration was adopted in September 2000 at the largest ever gathering of heads of heads of States committing countries both rich and poor to do all they can to eradicate poverty, promote human dignity and equality and achieve peace, democracy and environmental stability. The goals include those dedicated to eradicating poverty, achieving universal primary education, promoting gender equality and empowering women, reducing child mortality, improving maternal health, combating HIV/AIDS, malaria and other diseases, ensuring environmental sustainability and developing a global partnership for development.

Sources of Data for this Chapter

Data collected during the field research for this chapter was from two main sources. First, from relevant literatures, and government documents (secondary data). Secondly, from questionnaires and structured interviews (primary data) targeted at some of the management staff of the Oil Companies operating in the Niger Delta region. This chapter dealt with the Local Economy of the Niger Delta region. The part B of the questionnaire addressed the following questions:

- i) What is/are the main source (s) of income for the people in your community?
- ii) “If your answer is farming and/or fishing, how would you rank the recent yield?”
- iii) What factors do you think could be responsible for your answer above?

The above issues were addressed in this chapter.

The information obtained from the structured interviews with some management staff of the oil companies were compared with the responses obtained from the respondents of the questionnaires distributed in some selected rural communities of the Niger Delta region.

5.1 Results and Discussions

5.1.1. The Main Sources of Income for the Niger Delta People

Fishing and farming are the two major traditional occupations of the people of the Niger Delta region. During the colonial era, forestry was introduced as the third major economic activity in the region. According to the result extracted from the field questionnaires, farming and fishing still account for about 90% of the economy of the region (see figure 21 and 22 below). These two economic activities have declined tremendously since the discovery of oil in this region. Agriculture hitherto, used to be the mainstay of the Nigerian economy during the colonial era, and this region used to be the hotspot for agriculture during those old good days. The rubber plantations that once covered thousands of hectares of land in the region were cleared as the oil boom commenced. Many palm and cocoa plantations were neglected and allowed to revert to bush.

What is/are the main source (s) of income for the People in your Community?

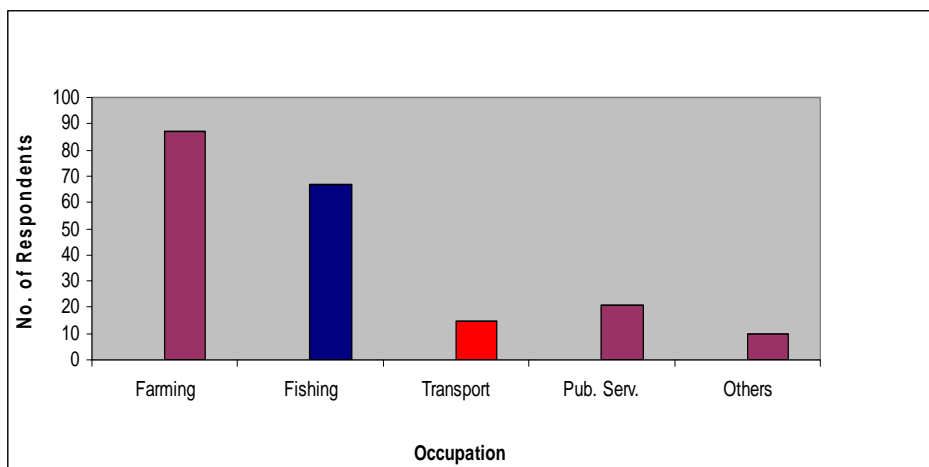


Figure 21: Graph Showing Sources of Income of the Local People in the Niger Delta Region.



Figure 22: Fish as a Source of Income in the Niger Delta Region

However, the government has been trying since 1990 to revive the agricultural sector. There are massive establishments of rubber plantations; cocoa and oil palm farms are being rehabilitated. There is increased activity in arable crop cultivation, particularly of cassava for commercial purposes in the region at present.

According to some of the respondents of the questionnaires, the recent yield of farming/fishing activities have not been very good. They attributed this to the oil exploration activities going on in the region. Most of them complained about frequent oil spills that enter the creeks and rivers, and eventually cause massive fish kills. This had made fishing in some of the rivers in the region impossible, thereby affecting their livelihood. The spills also destroy the farmlands by rendering them non-productive for the crops that normally grow in the region.

The Urban Sector

With its concentration of informal sector activities, the urban sector plays a growing role in the economy of the Niger Delta region. Trading (17.4 per cent), services (9.8 per cent) and miscellaneous activities (11.1 per cent) are the most important areas of employment for the people in the region, after agriculture, fishing and forestry (Niger Delta HD Report, 2006). In addition, a strong informal sector economic base is growing in the rural areas of the Niger Delta.

However, the major challenge that is facing the Niger Delta economy now is how to revamp the rural economy by optimizing and modernizing agriculture as well as fishing. This will definitely contribute to the economic emancipation of the region, thereby reducing poverty amongst the local population. Oil wealth can be put to good use in this regard, and this would make the people from the region to feel a sense of belonging.

All the multination oil companies in Nigeria are operating in the Niger Delta region. They are involved in joint venture partnerships with the Federal government in connection with oil exploration, exploitation and production. According to the Niger Delta HD Report (2006), the links between the operations of the oil companies and human deprivation in some areas of the Niger Delta has raised some expectations that the oil companies should contribute to the physical and human development in the affected communities. It is however expected that the oil companies carryout their operations in

compliance with environmental standards for exploration and exploitation, and where necessary, pay restitution for damages done to the environment. It is however, a fact that the activities of the multinational oil companies in the Niger Delta region have transformed the local economy of the region. Some communities have greatly benefited from oil production, through attractive wages for full-time employment or specialized contractual services, although underemployment and unemployment are also rife in the region (Niger Delta HD Report, 2006).

5.2 The Human Development Index (HDI) – the Nigerian Context

The Human Development Index (HDI) is the normalized measure of life expectancy, literacy, education, standard of living, and GDP per capita for countries worldwide (Davies and Quinlivan, 2006). It is a standard means of measuring well-being, especially child welfare. It is used to determine and indicate whether a country is a developed, developing, or an underdeveloped country. It is also used to measure the impact of economic policies on quality of life (Davies and Quinlivan, 2006). The HDI measures the average achievements in a country in three basic dimensions of human development:

- A long and healthy life, as measured by life expectancy at birth;
- Knowledge and education, as measured by the adult literacy rate and the combined primary, secondary, and tertiary gross enrollment ratio; and
- A decent standard of living, as measured by the log of gross domestic product (GDP) per capita at purchasing power parity (PPP) in USD.

Each year since 1990, the Human Development Report has published the human development index (HDI) that looks beyond GDP to a broader definition of well-being. The HDI provides a composite measure of three dimensions of human development: living a long and healthy life (measured by life expectancy), being educated (measured by adult literacy and enrolment at the primary, secondary and tertiary levels) and having a decent standard of living (measured by purchasing power parity, PPP, income). The index is not in any sense a comprehensive measure of human development. It does not, for example, include important indicators such as inequality, and it is difficult to measure indicators like respect for human rights and political freedoms. What it does provide is a broadened prism for viewing human progress and the complex relationship between income and well-being (UNDP HD Report, 2006).

The HDI for Nigeria is 0.448, which gives Nigeria a rank of 159th out of 177 countries in 2004 as contained in 2006 report (UNDP HD Report, 2006); see data in Table 10 below. The Niger Delta represents bulk of this figure considering the level of poverty in the region. This author has described the region as the most impoverished part of Nigeria considering his observations and experiences during the fieldwork for this research in the region.

Table 10: Nigeria's Human Development Index 2004

HDI value	Life expectancy at birth (years)	Combined primary, secondary and tertiary enrolment (%)	GDP per capita (PPP US\$)
1. Norway (0.965)	1. Japan (82.2)	1. Australia (113.2)	1. Luxembourg (69,961)
157. Eritrea (0.454)	164. Chad (43.7)	138. Madagascar (56.5)	152. Tajikistan (1,202)
158. Rwanda (0.450)	165. Congo, Dem. Rep. of the (43.5)	139. Yemen (55.4)	153. Burkina Faso (1,169)
159. Nigeria (0.448)	166. Nigeria (43.4)	140. Nigeria (55.0)	154. Nigeria (1,154)
160. Guinea (0.445)	167. Equatorial Guinea (42.8)	141. Togo (55.0)	155. Kenya (1,140)
161. Angola (0.439)	168. Mozambique (41.6)	142. Zambia (54.3)	156. Central African Republic (1,094)
177. Niger (0.311)	177. Swaziland (31.3)	172. Niger (21.5)	172. Sierra Leone (561)

(UNDP Human Development Report 2006)

The 2006 report which refers to HDI of 2004 highlights the very large gaps in well-being and life chances that continues to divide our increasingly interconnected world (UNDP HD Report, 2006). By looking at some of the most fundamental aspects of people's lives and opportunities it provides a much more complete picture of a country's development than other indicators, such as GDP per capita. Table 10 illustrates those countries on the same level of HDI as Nigeria can have very different levels of income and life expectancy.

Human development index tends to tell an important story. Since the mid-1970s almost all regions have been progressively increasing their HDI scores (see Figure 23). East Asia and South Asia have accelerated progress since 1990. Central and Eastern Europe and the Commonwealth of Independent States (CIS), following a catastrophic decline in the first half of the 1990s, has recovered to the level before the reversal. The major exception is

Sub-Saharan Africa. Since 1990, it has stagnated, partly because of economic reversal but principally because of the catastrophic effect of HIV/AIDS on life expectancy.

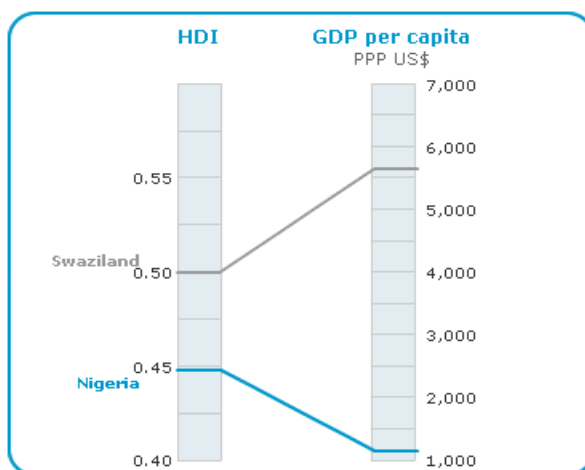


Figure 23: The Human Development Index Gives a More Complete Picture than Income (UNDP Human Development Report, 2006)

The HDI for Nigeria is 0.470, which gives the country a rank of 158th out of 177 countries with data in 2005 as contained in 2007/2008 report (see Table 11 below).

Table 11: Nigeria's Human Development Index 2005

HDI value	Life expectancy at birth (years)	Adult literacy rate (% ages 15 and older)	Combined primary, secondary and tertiary gross enrolment ratio (%)	GDP per capita (PPP US\$)
1. Iceland (0.968)	1. Japan (82.3)	1. Georgia (100.0)	1. Australia (113.0)	1. Luxembourg (60,228)
156. Senegal (0.499)	163. Botswana (48.1)	102. Algeria (69.9)	136. Nepal (58.1)	158. Rwanda (1,206)
157. Eritrea (0.483)	164. Côte d'Ivoire (47.4)	103. Tanzania (United Republic of) (69.4)	137. Equatorial Guinea (58.1)	159. Benin (1,141)
158. Nigeria (0.470)	165. Nigeria (46.5)	104. Nigeria (69.1)	138. Nigeria (56.2)	160. Nigeria (1,128)
159. Tanzania (United Republic of) (0.467)	166. Malawi (46.3)	105. Guatemala (69.1)	139. Bangladesh (56.0)	161. Eritrea (1,109)
160. Guinea (0.456)	167. Guinea-Bissau (45.8)	106. Lao People's Democratic Republic (68.7)	140. Yemen (55.2)	162. Ethiopia (1,055)
177. Sierra Leone (0.336)	177. Zambia (40.5)	139. Burkina Faso (23.6)	172. Niger (22.7)	174. Malawi (667)

(UNDP Human Development Report, 2007)

This means Nigeria moved only one step up the HDI value and position in 2005 (0.448 and 158 position respectively) when compared with her HDI value and position in 2004 (0.470 and 159 position respectively) among other countries. This was not a significant progress (see Figures 23 & 24; Tables 10 & 11).

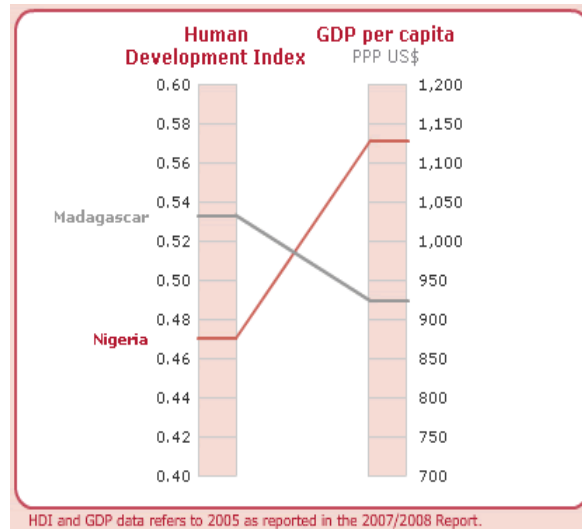


Figure 24: The Human Development Index Gives a More Complete Picture than Income (UNDP Human Development Report, 2007)

5.2.1 Human Poverty in Nigeria: Focusing on the Most Deprived in Multiple Dimensions of Poverty

The HDI measures the average progress of a country in human development. The Human Poverty Index for developing countries (HPI-1) focuses on the proportion of people below a threshold level in the same dimensions of human development as the human development index - living a long and healthy life, having access to education, and a decent standard of living (UNDP HD Report, 2006).

By looking beyond income deprivation, the HPI-1 represents a multi-dimensional alternative to the \$1 a day (PPP US\$) poverty measure. The HPI-1 value for Nigeria, 40.6, ranks 76th among 102 developing countries for which the index has been calculated for 2004 (see Table 10).

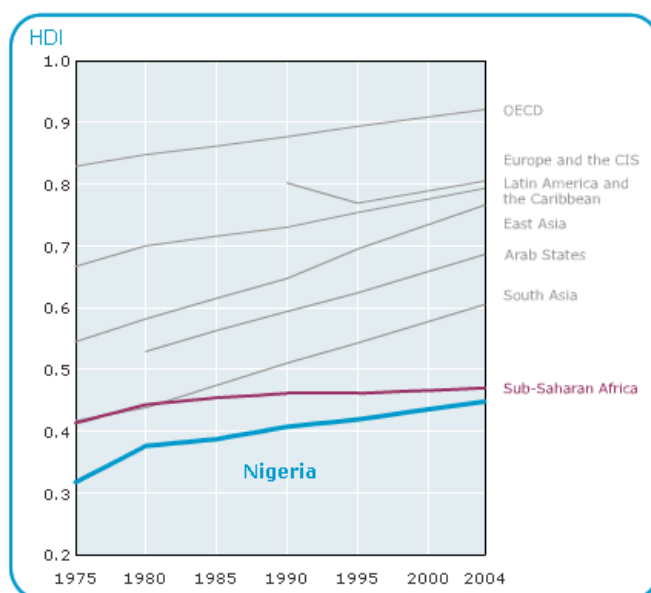


Figure 25: Shows the Values for These Variables for Nigeria and Compares Them to Other Countries (UNDP Human Development Report, 2006)

The HPI-1 measures severe deprivation in health by the proportion of people who are not expected to survive age 40 (UNDP HD Report, 2006). Education is measured by the adult illiteracy rate. In addition, the unweighted average of people without access to an improved water source and the proportion of children under age five who are underweight for their age measure a decent standard of living. Table 12 below shows the values for these variables for Nigeria and compares them to other countries.

Table 12: Selected Indicators of Human Poverty for Nigeria (2004)

Human Poverty Index (HPI-1) 2004	Probability of not surviving past age 40 (%) 2004	People without access to an improved water source (%) 2004	Children underweight for age (% ages 0-5) 2004
1. Uruguay (3.3)	1. Hong Kong, China (SAR) (1.5)	1. Bulgaria (1)	1. Chile (1)
74. Haiti (39.4)	158. Congo, Dem. Rep. of the (45.4)	114. Mali (50)	111. Chad (28)
75. Papua New Guinea (40.5)	159. Rwanda (45.5)	115. Guinea (50)	112. Sri Lanka (29)
76. Nigeria (40.6)	160. Nigeria (46.0)	116. Nigeria (52)	113. Nigeria (29)
77. Yemen (40.6)	161. Burundi (46.3)	117. Fiji (53)	114. Maldives (30)
78. Burundi (40.7)	162. Sierra Leone (47.0)	118. Congo, Dem. Rep. of the (54)	115. Congo, Dem. Rep. of the (31)
102. Mali (60.2)	172. Swaziland (74.3)	125. Ethiopia (78)	134. Nepal (48)

(UNDP Human Development Report, 2006)

Table 13: Selected Indicators of Human Poverty for Nigeria (2005)

Human Poverty Index (HPI-1) 2004	Probability of not surviving past age 40 (%) 2004	Adult illiteracy rate (% ages 15 and older) 2004	People without access to an improved water source (%) 2004	Children underweight for age (% ages 0-5) 2004
1. Chad (56.9)	1. Zimbabwe (57.4)	1. Burkina Faso (76.4)	1. Ethiopia (78)	1. Nepal (48)
27. Yemen (38.0)	12. Congo (Democratic Republic of the) (41.1)	34. Lao People's Democratic Republic (31.3)	8. Congo (Democratic Republic of the) (54)	22. Angola (31)
28. Burundi (37.6)	13. Guinea-Bissau (40.5)	35. Guatemala (30.9)	9. Fiji (53)	23. Maldives (30)
29. Nigeria (37.3)	14. Nigeria (39.0)	36. Nigeria (30.9)	10. Nigeria (52)	24. Nigeria (29)
30. Malawi (36.7)	15. Côte d'Ivoire (38.6)	37. Tanzania (United Republic of) (30.6)	11. Madagascar (50)	25. Sri Lanka (29)
31. Rwanda (36.5)	16. Uganda (38.5)	38. Algeria (30.1)	12. Mali (50)	26. Philippines (28)
108. Barbados (3.0)	173. Iceland (1.4)	164. Estonia (0.2)	125. Hungary (1)	134. Chile (1)

(UNDP Human Development Report, 2007)

The HPI-1 value of 37.3 for Nigeria, ranks 80th among 108 developing countries for which the index has been calculated for 2005 (see Table 13). This shows a slight progress in the fight against poverty in Nigeria when compared with the HPI-1 value of 2004 (see Table 12).

5.2.2 Poverty in the Niger Delta Region

The rate of poverty in Nigeria has increased since 1980 (see table 14 below). According to the Federal Office of Statistics (1999), while poverty incidence was 28.1 per cent in 1980, it rose to 46.3 per cent in 1985. It declined slightly to 42.7 per cent in 1992, before increasing dramatically to 65.6 per cent in 1996. Estimates from the Central Bank of Nigeria in 1999 put the poverty rate in Nigeria at 69 per cent in 1997 according to the Niger Delta HDI report of 2006. According to Aigbokhan (1998), using the food energy intake measure, determined the incidence of national poverty as 38 per cent in 1985, 43 per cent in 1992 and 47 per cent in 1996.

However, the National Bureau of Statistics (2004) suggests that using the food energy intake measure yields a figure of 34.9 per cent in 2004. But the relative poverty (which refers to people living below two-thirds of the average weighted household income) trend reveals that the incidence rose from 28.1 per cent in 1980 to 46.3 per cent in 1985, but declined to 42.7 per cent in 1992, it later rose to 65.6 per cent in 1996 before it declines again to 54.4 per cent in 2004 (refer to Table 14 below).

The poverty situation in the Niger Delta region is similar to that at the national level. However, in Rivers and Bayelsa states, the poverty level seemed to have stabilized at around 44 per cent after an initial jump from 7 per cent, the poverty level increased between 1980 and 1996 as shown in Table 14. In accordance with the national estimate, poverty incidence declined between 1996 and 2004 (Niger Delta HD report, 2006).

5.2.3 The Perception of Poverty by the People of Niger Delta Region

According to World Bank (2006), Poverty is hunger. Poverty is being sick and not being able to see a doctor. Poverty is not having access to school and not knowing how to read or write. Poverty is not having a job, is fear for the future, living one day at a time. Poverty is losing a child to illness brought about by unclean water. Poverty is about powerlessness, lack of representation in decision making in the society and lack of freedom to express oneself. The above definitions from the World Bank typically depict the poverty situation in the Niger Delta region.

Table 14: Incidence of Poverty in the Niger Delta Region (1980-2004)

	1980	1985	1992	1996	2004	
Nigeria	28.1	46.3	42.7	65.6	54.4	
Edo/Delta	19.8	52.4	33.9	56.1	Delta Edo	45.35 33.09
Cross River	10.2	41.9	45.5	66.9	41.61	
Imo/Abia	14.4	33.1	49.9	56.2	Imo Abia	27.39 22.27
Ondo	24.9	47.3	46.6	71.6	42.15	
Rivers/Bayelsa	7.2	44.4	43.4	44.3	Rivers Bayelsa	29.09 19.98

(National Bureau of Statistics, 2004)

The critical issue in the Niger Delta is not only the increasing incidence of poverty, but also the intense feeling among the people of the region that they ought to do far better. This is based on the considerable level of resources in their midst, and the brazen display

and celebration of ill-gotten wealth in Nigeria, most of which derives from crude oil wealth (Niger Delta HD report, 2006). This explains why there is so much frustration and indignation, which has led to series of hostage taking of oil workers and other conflicts in the region.

The poverty rate based on the perception of the people from the region is much higher than the data indicated in Table 14 above. This is corroborated by some of the respondents of the questionnaires distributed during this research. One respondent gave the following insight about the poverty in the region *“we do not have access to ordinary clean drinking water in this our community for the past fifteen years, no hospital, no access road to the state capital, the government and the oil companies are less concerned about our welfare, rather are more concerned and interested in our oil”*. Even if poverty is measured as living on less than US \$1 a day, the true levels of poverty in the region will still be underestimated.

Poverty is linked to the environment in complex ways, particularly in African economies, which are based on natural resources (World Bank, 1990b). Degradation of these resources reduces the productivity of the poor – who most rely on them – and makes the poor even more susceptible to extreme events (meteorological, economic, and civil unrest as we have in the Niger Delta region). Poverty makes recovery from such events even more difficult, and contributes to lowering social and ecological resistance. Poverty is also a factor in accelerating environmental degradation as seen in the Niger Delta region, since the poor, with shorter time horizons and usually less secure access to natural resources, are unable and often unwilling to invest in natural resource management (for example, soil conservation and fertilizers). In addition, poor people are often the most exposed to environmental damage, because they cannot afford, for example, to purchase safe water or to live in a neighborhood that is less polluted (World Bank 1990b). Reducing poverty will often lead to improved environmental quality and vice versa (Mink 1993; World Bank 1992a).

Poverty is a crosscutting issue with numerous dimensions. While it may be measured in terms of the income or resources of an individual, many of the conditions that perpetuate or alleviate poverty are at the communal or societal level (Niger Delta HD report 2006). The poverty in the Niger Delta region encompasses the issues of discrimination, neglect

and the lack of a voice. Another dimension is that the people of this region have been excluded from having access to good life accruing from the oil wealth, even as the resources for transforming other parts of the country are coming from the Niger Delta. A critical and realistic assessment of the poverty in the Niger Delta region should focus on key considerations such as access to health care, education, water, transportation and other basic amenities of life, as well as the extent to which people are involved in decisions that affect them (Niger Delta HD report 2006).

5.3 The Revenue Base of Human Development in the Niger Delta Region

The Niger Delta region sustains the Nigerian economy through its oil wealth. The oil revenues, in form of crude and gas exports, petroleum profits taxes and royalties, and domestic crude oil sales accounted for an average of 79.52 per cent of the total revenues of the Nigerian Federation from 2000 to 2004 (Niger Delta HD report, 2006). During this same period, according to sources from the Central Bank of Nigeria the contribution of oil to total export earnings of Nigeria was 79.53 per cent.

Table 15: Revenue and Expenditures of the Federal Government and Niger Delta States in 1999.

Fed. Govt./States	Total revenues (N'mn)	Revenue s Statut. Allo. (N'mn)	Share of statutory allocation in total revenues (%)	Total exp. (N'mn)	Exp. Recurrent exp. (N'mn)	Capital exp. (N'mn)	Share of capital exp. in Total (%)
Fed. Govt.	662,585.3	218,874.5	33.0	947,690.0	449,662.4	498,027.6	52.5
Abia	3,458.3	2,268.5	65.5	3,544.9	2,245.2	1,299.7	36.6
Akwa Ibom	5,389.6	3,161.1	58.6	5,389.6	3,377.3	1,889.3	35.0
Bayelsa	3,938.8	2,666.4	67.6	3,923.5	2,708.4	1,215.1	30.9
Cross River	3,824.9	2,786.4	72.8	3,948.6	2,302.4	1,546.2	39.1
Delta	6,690.1	3,382.8	50.5	7,145.5	4,431.2	2,714.3	37.9
Edo	5,127.2	2,644.2	51.5	5,027.7	3,179.8	1,847.9	36.7
Imo	3,540.5	2,526.5	71.3	3,474.2	2,071.9	1,402.3	40.3
Ondo	4,049.6	2,621.1	64.7	3,941.8	2,681.3	1,260.5	31.9
Rivers	8,379.4	3,196.5	38.1	7,579.2	4,002.6	3,576.6	47.1

(Source: Central Bank of Nigeria, 1999)

Tables 15 and 16 show huge increases in revenues accruing to the Federal government and Niger Delta states' governments between 1999 and 2003. Despite the huge allocations from the Federation account to the Niger Delta states, there is still grinding poverty, neglect and deprivation in the region that produces the nation's oil wealth. The tables indicate that capital expenditures to provide a basis for rapid progress in human

development are low compared to recurrent expenditures on personnel and overhead costs.

Table 16: Revenues and Expenditures of the Federal Government, Niger Delta States and NDDC in 2003

Fed. Govt./ States/ NDDC	Total revenues (N'mn)	Revenues Statutory allocation (N'mn)	Share of statutory allocation in total revenues (%)	Total expenditures (N'mn)	Exp. Recurrent exp. (N'mn)	Capital exp. (N'mn)	Share of capital exp. in total (%)
Fed. Govt.	1,023,241.2	889,197.8	86.9	1,225,965.9	984,277.6	241,688.3	19.7
Abia	17,496.0	12,846.8	73.5	17,022.4	8,562.8	5,588.9	32.8
Akwa Ibom	39,906.5	30,655.5	76.8	56,737.0	34,000.0	20,633.0	36.4
Bayelsa	38,716.0	34,741.9	89.7	27,982.2	13,853.1	10,250.9	36.6
Cross River	17,466.9	12,436.8	71.2	14,542.6	8,225.8	3,300.0	22.7
Delta	65,057.0	51,191.8	78.7	67,148.6	40,858.6	25,410.2	37.8
Edo	17,242.0	11,891.5	69.0	17,292.0	12,564.4	2,169.7	12.5
Imo	18,337.9	13,889.3	75.7	35,175.1	20,922.2	7,277.1	20.7
Ondo	30,528.0	15,114.5	49.5	38,834.4	16,252.3	21,719.0	55.9
Rivers	73,415.0	41,984.1	57.2	70,233.6	36,699.0	28,779.5	41.0
NDDC*	NA	9,044.5		NA	NA	NA	

Note: *The revenue of the NDDC for the years 2000, 2001 and 2003 was N19, 988.9 million (Central Bank of Nigeria, 2003).

From the above tables, it can be seen that the revenue allocation to the Niger Delta States increased sharply between 1999 and 2003, but the quality of such spending was terribly low, considering the already low level of human development in the states. These were attributable to bad governance and corruption in the system.

The poverty in the Niger Delta region had led to agitation for the control of the oil resources in the region, and this had drawn the attention of government to increase the derivation percentage from three per cent to 13 per cent in 1999. However, this does not satisfy the demand of the region, they are demanding for a 25 per cent increase in the derivation formula, which should be increased again to 50 per cent in the medium term. This matter is still under discussions at the Nigerian National Assembly (the Law makers).

5.4 Recommendations and Conclusions

5.4.1 Poverty Eradication Programs Aimed at Economic Sustainability of Nigeria

According to Government sources, the Nigerian Government had mapped out strategies, Policies and Plans for the eradication of extreme poverty in Nigeria in accordance with the first goal of the Millennium Development Goals (MDGs), with the assistance of the United Nations Development Program (UNDP).

The thrust of current Nigerian Government policy against poverty is to enable the poor and more vulnerable sections of society to achieve sustainable livelihoods. The approach is to economically empower communities, families, and individuals through a sustained, well coordinated, and comprehensive program of poverty alleviation.

On-going Government activities related to poverty eradication featured in the National Rolling Plan beginning with the 1990-1992 Plan. They include programs such as:

- Economic programs for the empowerment of women;
- Primary Health Care (PHC) program, whose purpose is to bring health care, particularly preventive health care to the grass roots of the Nigerian Society;
- Establishment of the Agricultural Development Program (ADP) in all States of the Federation;
- Establishment of the People's Bank, aimed at extending small credits to people in the informal sector of the economy with the aim of strengthening informal economic activities, cities, and towns and villages;
- Establishment of the National Economic Recovery Fund (NERFUND) which provides easy access to credit by small and medium scale enterprises;
- Establishment of the National Directorate of Employment (NDE), a self employment promotion program which has largely promoted wealthy employment activities;
- Education of itinerant communities such as the Fulani nomads, Ijaws;
- Establishment of the River Basin Development Authorities and provision of rural access roads;
- Establishment of the National Agricultural Land Development Authority (NALDA) aimed at promoting integrated rural development; and

- Creating employment opportunities through the above programs to ensure the economic sustainability of every region of Nigeria.

5.4.2 The Link between Poverty and the Environment

There is an inextricable link between poverty and environmental degradation. Poverty can be the cause and/or the effect of environmental degradation. Poverty itself is a complex multidimensional problem with origins in both the National and international domains. While managing resources sustainably, an environmental policy that focuses mainly on the conservation and protection of resources must take due account of those who depend on the resources for their livelihoods, otherwise it could have an adverse impact both on poverty alleviation and on chances for long-term success in resource and environmental conservation.

Equally, a development policy that focuses mainly on increasing the production of goods without addressing the sustainability of the resource base will eventually run into declining productivity, thereby aggravating poverty. A specific anti-poverty strategy is, therefore, one of the basic conditions for ensuring sustainable development. The long-term objective of enabling all people to achieve sustainable livelihoods should provide an integrating factor that allows policies to address issues of development, sustainable resource management, and poverty eradication simultaneously.

Chapter Six

Developmental Activities and Social Services in the Niger Delta Region

This chapter discusses the state of developmental activities and provision of social services in the Niger Delta region. Majority of communities in this region no doubt lack the basic social services and amenities like portable water, good road networks, good housing, power supply, transport, health services and waste management facilities. Suffice it to say that there is dearth of development in the Niger Delta region. This chapter therefore takes a critical look at the situation of these facilities in the region.

6.0. Introduction

Development spending by the oil companies has brought appreciable social services, utilities and other infrastructures to pockets of communities in the Niger Delta region, in the absence of what the government could have provided. Majority of respondents of the questionnaires indicated that they were aware of developmental projects going on in their local communities being embarked upon by the oil companies. This corresponded with the response received during the structured interviews with some of the management staff of the oil companies.

However, despite the efforts of the oil companies in providing most of the infrastructures, the communities in the Niger Delta still lack most basic infrastructures like adequate electricity, clean drinking water, waste water treatment facilities, telecommunication, access road networks and good housing. According to one of the respondents to the research questionnaire *“The absence of basic infrastructural amenities in our communities are the hallmark of the agitations and hostage taking of oil workers in the region. We are appealing to the governments and oil companies to bring us out of this horrible situation, we are not asking for too much”*.

Sources of Data for this Chapter

This chapter covers the aspect of infrastructural development and provision of social services in the Niger Delta region of Nigeria. The data collected for this chapter was collected from the following sources:

- i) information from the structured interviews targeted at some of the management staff of the oil companies operating in the region;

- ii) information from the questionnaires distributed to some locals in the Niger Delta region; and
- iii) information from relevant literatures.

Part D of the questionnaires addressed the issues that dealt with the provision of infrastructural facilities and other developmental programs in the region. This part tries to answer the following questions contained in the questionnaires:

- i) Are you aware of any developmental projects going on in your community?
- ii) If your answer above is “yes”, would you list the developmental projects that are going on in your community?
- iii) Do you know who initiated the projects listed above?
- iv) “Do you know about any economic incentives coming to your community from the Government or the oil companies operating therein”?
- v) “Are you aware of any environmental management programs put in place in your community”?
- vi) If your answer above is “yes”, do you know who the managers/initiators of these programs are?

About 86 percent of the questionnaires distributed in the local communities concerning the above issues were returned. Also the information from the structured interviews with some of the management staff of the oil companies concerning the above issues were also employed in this discussion.

6.1 Results and Discussion

6.1.1 Infrastructure and Social Services in the Niger Delta Region

In general, the available social development indicators in the Niger Delta region points to inadequate, unavailable and poor quality infrastructure and social services from water to telecommunications. The long neglect of this region’s development poses a great barrier to attaining socio-economic transformation and poverty alleviation (Niger Delta HD report, 2006). About 70 percent of the respondents to the questionnaires testified that some forms of developmental projects were going on in their communities. They include: market stalls, cottage hospitals, road construction, and provision of borehole water. All these projects according to the respondents were being carried out by the oil companies operating in their communities. However, these facilities were not available in some

communities, and where they are available do not serve the majority of the local populace. The infrastructural facilities and the degree of their availability are discussed below.

Water Supply

Information from the National Bureau of Statistics reveal that water in the majority of Niger Delta states comes from unsafe supply facilities, including rivers, lakes or ponds, unprotected wells and boreholes. The Bureau classifies available sources of potable water for household consumption as pipe borne, untreated pipe, borehole, protected well, unprotected well, river/lake/pond, vendor trucks and other categories.

In five of the nine states in the region: Akwa Ibom, Bayelsa, Cross River, Ondo and Imo, water problems are very acute and result in supplies of unsafe water in more than 50 per cent of the cases (NDES, 2000). An NDES Report (2000) covering the states of the Niger Delta region, except Cross River State, also found that most settlements depend on untreated surface water and wells, which leads to health problems from waterborne diseases. It was estimated that only 20 per cent to 24 per cent of rural communities and 45 per cent to 50 per cent of urban communities have access to safe drinking water (refer to Figure 26 below).

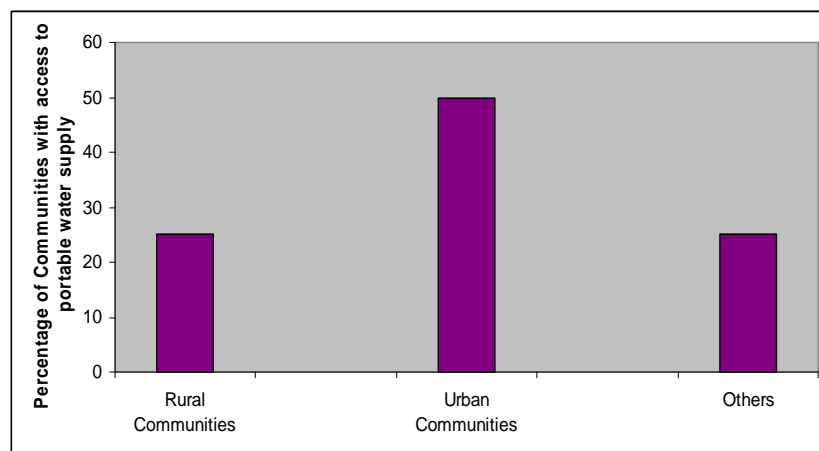


Figure 26: Graph Showing Percentage of Portable Water Supply in the Niger Delta Region.

However, poor access to adequate drinking water has had serious implications for the general poor health, environment, economic activity and sustainable livelihoods in the Niger Delta region. The lack of potable water in rural areas, as well as severe shortages of pipe borne water in urban centers necessitates new policies that favour community

involvement and participation in devising and managing water supply systems in a sustainable manner.



Figure 27: Borehole Water Supply in the Niger Delta Region

Portable water supplies (boreholes) in the Niger Delta region are provided by the oil companies operating in the region (see figure 27 above). Most of the respondents to the questionnaires voiced their outrage of government total neglect; they said most of the infrastructural facilities available in their communities were provided by the oil companies and non from the local, state or federal governments.

During floods, which in some areas last for over half the year, drinking water often becomes contaminated causing high levels of bacterial, viral, and parasitic outbreaks (Linden, 1991). Water borne diseases are also a severe problem during the dry season because water supplies are often inadequate to dilute contaminants. This shows that water related diseases exert an enormous social and economic toll on the Niger Delta region. These problems are exacerbated by the fact that both urban and rural infrastructure is poor – water supply, and sanitation levels are very low. According to the report from Rivers State Ministry of Health, between 20-25 per cent of the rural communities and 45-50 per cent of urban centers have access to safe drinking water in the Niger Delta region. The report went further to indicate that adequate sanitation is available only to 20 per cent of the residents in the region compared to the national average of 28 per cent. No municipal wastewater treatment facilities exist in the region.

Housing

Housing in the rural communities in the Niger Delta region is predominantly of poor quality especially in the swamps and creeks where dwellings are made up of mud walls. A survey carried out by NDES revealed that 30.4 per cent of houses in the region had mud walls, 53.8 per cent had Make-shift buildings, and 46.6 per cent had a strip foundation (see figures 28 & 29 below). The flooring materials are predominantly concrete followed by mud.

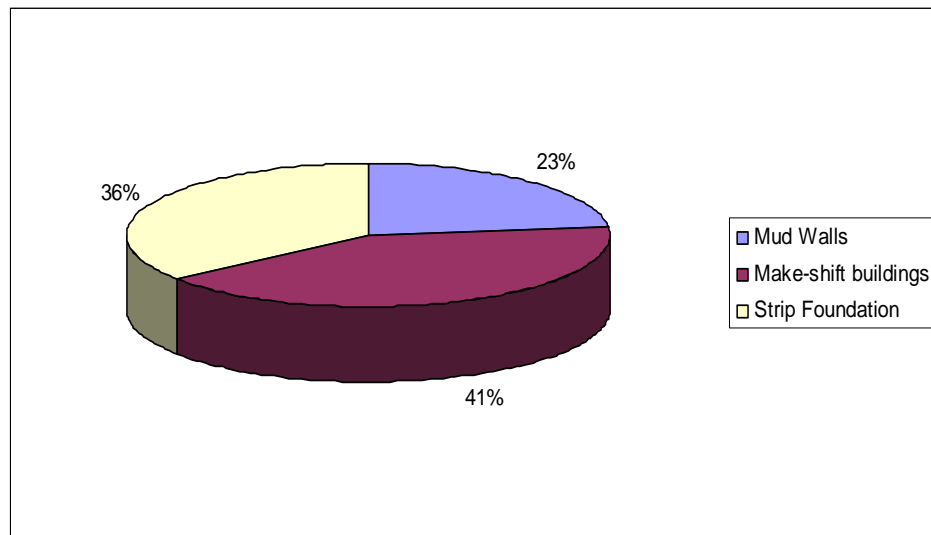


Figure 28: The Quality of Housing in the Niger Delta Region



Figure 29: A Strip Foundation Building in the Niger Delta

Transport

Because of the terrible terrain of the Niger Delta region, the major mode of transportation is canoe and ferry, and to a lesser extent automobiles. The road networks in the region are in deplorable states, and this has worsened the hardship of the local people. Although,

urban road transportation development has recently been accorded some priority attention, and less regards has been shown for rural transportation, especially water transport, which the majority of the rural populace depend on. The author observed during the fieldwork that road transport in most parts of the Niger Delta region was hectic and terrible, and a source of misery to the people of the region. Because of the horrible and deplorable state of roads in the region, people trek long and excruciating distances before getting to their local government headquarters.

Some of the oil companies have embarked on construction of rural roads in some parts of the Niger Delta region as part of their contribution in the development of the region. However, most of the roads constructed by the oil companies lead to their oil facilities in the local communities.

Power and Fuel Supply

The general sources of household fuel in the Niger Delta region are electricity, kerosene, gas, charcoal, firewood, crop residues, animal wastes and others (see figure 30 below). Data from the Federal Office of Statistics shows that across the region, on average, only 34 per cent of people use electrical lighting; 61 per cent use kerosene or lantern. Less popular sources of lighting are gas (1.2 per cent on average), generating sets (1.5 per cent), batteries (0.2 per cent), candles (0.6 per cent), firewood (1.8 per cent) and others (1.2 per cent). The primary energy source in the region is firewood (a mean of 73 per cent), followed by kerosene (24.8 per cent) and gas (1.2 per cent).

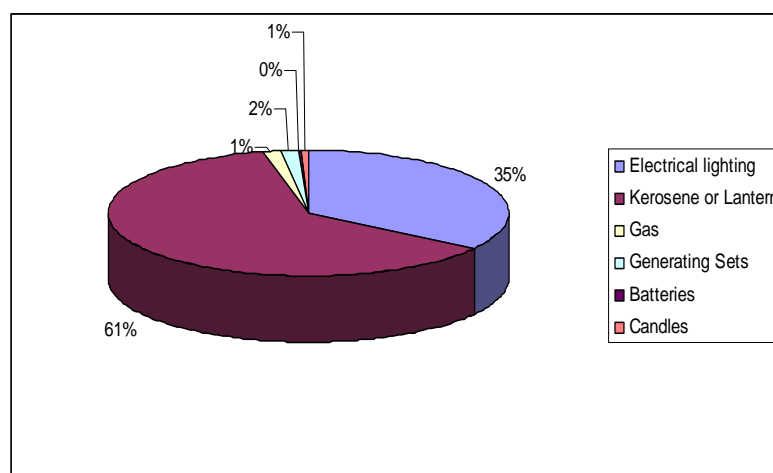


Figure 30: Power and Fuel Supply in the Niger Delta Region

Waste Management Facilities

The Niger Delta region is laden with problems related to waste management (Niger Delta HD report, 2006). The waste management problems are the combined effects of environmental pollution from oil, gas and industrial activities, as well as the population issues in the semi-urban and urban areas. The Niger Delta region lacks the modern facilities for treating wastes coming from the various industrial activities that take place in the region. The people in the region also lack adequate toilet systems and, sewer systems are non-existent.

According to the National Bureau of Statistics (2005), the most widespread methods of waste or refuse disposal are disposal within household compounds (an average of 56.9 per cent) and disposal in authorized heaps (34 per cent). Other methods are through collection by the government (3.3 per cent), collection by private service providers (2.7 per cent), the use of government disposal bins (1.4 per cent) and others (2.7 per cent) as shown in Figure 31 below. Recent ecological studies have shown that the adverse consequences of waste generation and improper disposal have been severe on both people and the environment. These effects have also influenced the stagnation of human livelihoods and the region's economy.

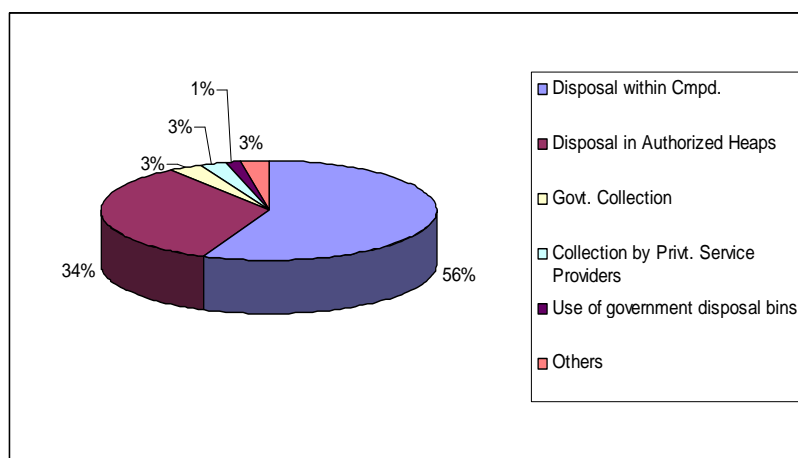


Figure 31: Waste Management Systems in the Niger Delta Region.

Health Service Delivery

The health delivery systems in the Niger Delta region are in abysmal state. The majority of the Niger Delta communities living in the rural and isolated areas lack the most basic modern medical care, including first aid, given the absence of formal health services in

much of the hinterland. The few existing public health centers in the region are all in critical need of repair. They lack doctors, nurses, and critical supplies such as drugs, syringes and sterilizers. However, there are few privately run clinics in the region, but their charges are very exorbitant, so the community people resort to local and traditional remedies to deal with their health conditions.

According to NDES (1997), communities have identified health as a major issue that must be addressed to improve their quality of life. In addition to the range of diseases such as malaria, gastroenteritis, respiratory track infections, measles, worm infestation, anemia and heart diseases, malnutrition was seen as a major problem especially among children, with about 10 per cent to 12 per cent severely malnourished, 18 per cent to 23 per cent moderately malnourished, and 30 to 40 per cent mildly malnourished (NDES, 1997). The malnourishment is perceived to be due to food insecurity, and lack of breastfeeding methods.

According to an NDES (2000) report on primary health care, there is a ratio of only one health care facility for every 9,805 people, with the average facility serving an area of 44 square kilometers. There is one facility for approximately every 43 settlements. The numbers worsen for secondary health care. There is only one facility for every 131,174 people, serving an area of 583 square kilometers. A single facility serves an average of 48 settlements. Poor access to health care reduces people's quality of life and increases their poverty.

Most oil companies have tried to provide the basic health care facilities in some communities in the region, but this is not evenly spread. The oil companies have been able to build health centers in some communities and employed the health personnel working in them, and provide the medical supplies.

6.2 Social Priorities in the Niger Delta Region

The major social concerns in the Niger Delta region are; water supply, sanitation, and associated health problems. Health indicators for this region are significantly worse than southern Nigerian averages. Water related diseases, many of which result from poor sanitation and inadequate water supply, are the most severe health problems facing the Niger Delta region, causing about 80 per cent of reported illness. Malaria is by far the most prevalent disease, followed by diarrhoeal diseases. The State Health Ministries in

the region estimate that just 20 to 24 per cent of rural communities and 45 to 50 per cent of urban communities have access to safe drinking water sources. However, the situation has changed now with the intervention of some of the Oil Companies operating in the region. Through their community development programs, they have been able to dug bore holes in some of the host communities, some of these bore holes were captured in photograph during the field work for this study (Figure 27 above).

Despite the intervention by the Oil Companies in the rural communities, only 25 percent of the rural households in the Niger Delta region are estimated to use satisfactory sanitation facilities. No functional municipal wastewater treatment facilities are known to exist in the rural communities except those being proposed by some of the Oil Companies operating in the region. Urban residential wastes are directly discharged into the nearest open drain, water body, or soaked in the ground. When the drainage systems are filled with waste during heavy rainfalls, health risks from water related diseases are high. Usually during the dry season, clean water is difficult to find since contaminants are not readily diluted, thereby increasing the prevalence of water related diseases.

6.3 Constraints to an Environmental Development Strategy (EDS) in the Niger Delta

Institutional Constraints

The institutional framework for addressing environmental issues is expanding in the Niger Delta region in response to government and stakeholder concerns about environmental degradation. All the States in the region have established State Ministries of Environment, to tackle the problem of environmental degradation in their various states. A large number of other federal and state agencies also have environmental responsibilities. Although institutions exist with responsibility for mitigating all major environmental problems, severe constraints limit their actual impact. One of the major problems is that clear divisions of responsibilities often do not exist, leading to inaction or duplication of efforts. For example, six federal and state agencies in each state have flood and erosion control as part of their mandates. However, none of the agencies actually addresses flood and erosion problems and no management plans have been developed. In addition to low institutional cooperation, a client focus and accountability to stakeholders are missing. As a result, community participation in policy and program development is lacking. The government also has the tendency to create new agencies to address similar problems instead of strengthening existing ones.

Institutional objectives and programs are often inappropriate and even contradictory to achieving environmentally sustainable development. This is particularly a problem for line ministries with specific objectives, such as increasing the number of roads or improving agricultural output, which do not take into account the environmental and social impacts of their activities. Institutional objectives need to be revised to address sectoral needs, which are compatible with achieving the common goal of sustainable development. Even when institutional objectives are sound and clear priorities are established, financial, personnel, and technical constraints severely limit implementation of programs and enforcement of regulation. In most cases, budget allocations to address the key environmental and social concerns are not commensurate with the severity of the problems. Lacking sufficient resources and clear priorities, agencies rarely enforce existing regulations. For example, there is no enforcement of environmental sanitation, pollution, forest reserve, or environmental impact assessment regulations, monitoring is equally undeveloped. The States Forestry Departments have only rough estimates of the quantity of timber extracted from forest reserves and other areas. This is the same trend in most ministries that have regulatory roles.

Information Constraints

For effective enforcement, as well as policy and decision making, environmentally related information collection, analysis, and dissemination need to be greatly improved. Incomplete information encourages policy makers to emphasize areas with abundant information and ignore more uncertain and complex environmental and social issues. At present, not so much is known about Niger Delta ecosystems, resources, and communities to understand the full impact of resource extraction or the full value of the resources. For instance, the Forestry departments do not conduct forest inventories before allocating timber concessions, and so have only a vague concept of the value of the resources they are allocating.

Legislative and Regulatory Constraints

The most important regulatory constraint is the lack of enforcement of existing regulations. For almost all the priority environmental problems, regulations are in place, which, if enforced, would significantly reduce environmental degradation. Nevertheless, some modification of the current regulatory framework is necessary to improve the efficiency of environmental protection. For instance, overlapping oil pollution legislation

and regulatory frameworks have confused oil companies and negatively impacted oil pollution management. Another major regulatory constraint is the absence of market-based incentives. Although Rivers State government has already promulgated pollution charges, they have had little impact on reducing pollution because charges are not based on marginal effluent. The low energy, water, and waste disposal charges also provide minimal incentive to use resources more efficiently.

Policy Constraints

Policy failures frequently occur either because governments fail to address incomplete markets or intervene in markets to the extent that prices are distorted away from encouraging optimal use of resources. One of the policy failures in the Niger Delta region has been lack of well-defined property rights and their enforcement. Under the Land Use Act of 1978, all land belongs to the Federal Government and is administered by the Governor of each State. This policy curtails the traditional rights of local communities, restricts private property rights, and leads to inefficient resource use. The Act and lack of enforcement of communal property rights also encourages government agencies and private companies to ignore communal rights. Tenure insecurity reduces the incentives of producers to invest in the resource and to minimize sustainable benefits. For instance, farmers are unlikely to invest in land improvement or switch to longer maturing tree crops if their ownership is uncertain.

6.4 Recommendations and Conclusion

The governments should strive to overcome the above constraints by genuinely strengthening the various Ministries and Agencies charged with the protection of Nigerian environment. The governments owe it as a duty to their citizens to enforce environmental laws and regulations so as to save the environment and achieve sustainable development. Also positive economic incentives, such as tax credits, grants, or lines of credit, to encourage firms and individuals to consider the externalities of their actions should be introduced and enforced by government. The government should look into the Land Use Act of 1978, and introduce some amendments at least to give the people right of ownership of their lands.

In conclusion, it should be noted that insufficient tenure security has reduced participation and accountability of local communities. Oil companies, and government agencies have failed at various times to communicate adequately with local communities

and to respond to their concerns, this has brought many conflicts in the region. Since property rights are not always, recognized or enforced, institutions are frequently not held accountable to the groups most affected by their actions. Furthermore, without strong property rights and accountability, little incentive exists to ensure adequate stakeholder participation in planning and implementation of activities.

Chapter Seven

Environmental Regulation and Enforcement Aimed at Achieving Environmental Sustainability in Nigeria

This Chapter tries to address the issue of environmental regulation and enforcement on a global perspective. It looked into the state of the art application of Environmental Sustainability tool in Nigeria - Environmental Impact Assessment (EIA), which is usually conducted before certain projects that could have adverse impact on the environment are implemented. This chapter gives a detailed account of the development of EIA as a tool for achieving environmental sustainability and management. This chapter gave further details of EIA evolution in Nigeria. It also describes the various stages involved in Environmental Impact Assessment (EIA) practice in Nigeria, and some controversies surrounding its implementation.

7.0. Introduction

Environmental protection poses many challenges both on the social, economic and environmental contexts across the world today. Environmental enforcement authorities formulate environmental regulation. Environmental enforcement authorities as used in this research are those (governmental bodies; ministries, agencies, local governments etc.) that take action to ensure that environmental regulation is implemented. They are concerned primarily on the traditional command and control regulatory areas of issuing permits, monitoring and inspecting activities and, where appropriate, taking enforcement action (Farmer, 2007). The role of such regulation has changed and the range of alternative approaches has increased. However, it still forms the core of environmental protection activity in most countries.

As environmental enforcement is used for any governmental body that is responsible for key aspects of regulation, such as permitting or inspection, it does not specifically include other bodies that might be critical for regulation, such as the courts (Farmer, 2007).

In many countries of the developing world, Environmental Impact Assessment systems are still at the initial stages of evolution. The evolution of the up-and-coming systems has not resulted in concepts and practice that possess wide-ranging similarity with systems operated in the more developed countries. In Nigeria for instance, one observes multiplicity in the amount of EIA legislations. In the UK and the US, one law governs EIAs for national projects. Conversely, in Nigeria, three distinct national EIA systems

govern nationally funded projects. Disparities also exist in the manner of operation of the EIA systems. For example, unlike what obtains in US and UK practice, there is in the Nigerian experiment, the use of both multi-disciplinary and uni-disciplinary assessors. Indeed, the uni-disciplinary approach of one of the Nigerian EIA systems is explicitly supported in the enabling decree (Decree 88).

In these and other ways, it appears that the evolutions of some Nigerian systems are not resulting in replicas of the earlier established systems (such as the US NEPA Act of 1969). The existence of points of difference between Nigerian systems and the more conventional EIA systems gives rise to concern as to whether the Nigerian EIA experiments are satisfactorily evolving towards best EIA practice. There is, for that reason, a need for papers that investigate the development of the Nigerian systems, their possible current inadequacies, and how best the emerging systems can advance. The aim of the paper is to trace the evolution of EIS systems in Nigeria and discuss its current shortcomings in the light of fundamental characteristics of 'good' EIA systems. It is noted that such critical reviews have been undertaken in developed countries such as Ireland and the UK (Skeham, 1993; Wood, 1995, etc.), among others.

7.1. Literature Review

EIA systems have been developing all over the world since the late 1960s when EIA was first given legal status through the 1969 United States National Environmental Policy Act (NEPA). NEPA required EIAs for federally funded or supported projects in the US that were likely to have environmental effects, and has become an important model for other EIA systems internationally. Many state level EIA systems have been established in the USA in addition to NEPA. Indeed, 16 of the USA's 50 states have so-called "little NEPAs" for actions that require state funding or permission (Glasson et al., 1999). Since the enactment of NEPA, EIA systems have been established in various forms throughout the world beginning with more developed countries such as Canada (1973), Australia (1974), W. Germany (1975) and France (1976). The approval of a European Directive on EIA in 1985 made mandatory the enactment of EIA legislation in many European countries, as for example UK's Town and Country Planning (Assessment of Environmental effects) Regulations 1988. Following the breakup of the Soviet Union, EIAs were also enacted in the former Union countries in the early to mid-nineties. The early 1990s also saw a large growth in EIA systems in Africa (such as in Nigeria) and also in South America (Sadler, 1996 and Glasson et al., 1999).

In assessing EIA systems to determine what constitutes a 'good' system, Weston (1997) argues against international comparisons. He appraised the UK EIA system and declined to categorize it as inefficient relative to the US system, despite critical reviews of authors such as Wood (1995). To support this position, he reasoned that the adoption of EIA in the UK was actually considered in that country as a superfluous addition to an already highly developed Town Planning system. EIA was only taken up under compulsion of European Union directives. The so-called deficiencies of the UK EIA system as noted by Wood (1995) were a reflection of reluctance, in the UK, to replace or duplicate efficient provisions in the existing UK Town Planning system with US EIA provisions that were not necessarily better. It would be wrong to classify the UK system as inefficient for not incorporating all the provisions of the US NEPA. The deductions from Weston's arguments is that it might not be wise to compare systems operated in Nigeria with those of the US and UK, for the reason that origins, legislations and operating environments are different.

Consequently, it appears better to approach the appraisal of Nigerian EIA systems from the viewpoint of how well it has progressed along a path of evolution. The model proposed by Gibson (2002), based on his studies in Canada, is particularly relevant to such an appraisal, and it is possible to evaluate the development and structure of individual Nigerian EIA systems against this model to evaluate how well the systems are progressing towards the best possible concept and practice.

Gibson (2002) modeled the transition of EIA systems in Canada into four basic stages of evolution. The stages postulated are as follows:

Stage 1: Reactive pollution control through measures responding to identified local problems (usually air, water, or soil pollution), with solutions considered to be technical matters to be addressed through closed negotiation of abatement requirements between government officials and the polluters

Stage 2: Proactive impact identification and mitigation through impact assessment and project approval/licensing, still focused on biophysical concerns (though now integrating consideration of various receptors) and still treated as a largely technical issue with no serious public role (but perhaps expert review)

Stage 3: Integration of broader environmental considerations in project selection and planning through environmental processes with;

- Consideration of socioeconomic as well as biophysical effects

- Obligatory examination of alternatives, aiming to identify the best options environmentally as well as economically, and
- Public reviews (that reveal expert conflicts and uncertainties, and consequently the significance of public choice).

Stage 4: Integrated planning and decision making for sustainability, addressing policies and programs as well as projects, cumulative and global effects, with review and decision processes:

- Devoted to empowering the public,
- Recognizing uncertainties and favouring precaution, diversity, adaptability, and so on, expecting positive steps towards sustainability (Gibson, 2002).

Gibson observed that transition from one stage to another comes about by means of concerted effort, often in the face of stiff resistance, but he noted that the transition consistently brought about a more mandatory, participative and comprehensive EIA system. Specifically, he observed that EIA systems mature in nine aspects to become:

Earlier in planning beginning with purposes and broad alternatives;

- More open and participative, not just proponents, government officials and technical experts;
- More comprehensive, not just biophysical environment, not just local effects, not just capital projects, not just single undertakings;
- More mandatory (gradual conversion of policy-based to law-based processes);
- More closely monitored (by the courts, informed civil society bodies and government auditors);
- More widely applied (through law at various levels, but also in land-use planning, through voluntary corporate initiatives, and so on);
- More integrative (considering systemic effects rather than just individual impacts);
- More ambitious (overall sustainability rather than just individually 'acceptable' undertakings); and
- More humble (recognizing and addressing uncertainties, applying precaution).

Other writers have pointed out additional procedural features or indicators towards which EIA systems mature. One such feature considered as essential in the EIA process, by Frost (1997) is that a good EIA system should develop towards inculcating post decision

and implementation monitoring and audit provisions, that is, follow up checks sequel to development consent, to assess accuracy of impact predictions and ensure improvement in environmental design of projects. Abracosa and Ortolano (1987) and Kakonge and Imevbore (1993) pointed out another indicator-provision of adequate powers of enforcement to EIA agencies. They made a link between the need for institutional frameworks and the powers of agencies to fully enforce regulations and perform reviews of EIAs.

The Commission of European Communities (1992), Bulleid (1997), Alo (1999) and others consider that a practical examination of alternatives to the project in the assessment is central to any good EIA system, and it is noted that in reality, few EIA applicants are able to offer an alternative site, let alone a different technical solution. Skeham (1993), West et al. (1993) and others argue that the use of experienced EIA consultants is a fundamental aspect towards which EIA systems should evolve, and they observed a correlation between EIA quality and the experience of consultants and planning authorities.

Kakonge and Imevbore (1993) developed the issue of experience further by arguing that it is not just experience in personal terms which hinder good quality impact assessments, but the knowledge and data that is built with experience. Weston (1997), Bulleid (1997) and others point out that the provision of technical guidance on the content of Environmental Statements is another fundamental feature towards which EIA systems should evolve, since it leads to standardization of contents. Lee-Wright (1997) emphasizes the use of qualified multidisciplinary staff as another component of a good EIA system. She insists that EIA is team activity, and it is “almost impossible to envisage circumstances where the range of issues could be adequately addressed by a single individual”. Alo (1999) argues that for any good EIA system, EIA assessors and agencies must possess substantial analytical capabilities for fieldwork, laboratory testing, research, data processing and predictive modeling. Andrews et al. (1977), Read (1997), Beanlands and Duinker (1982), Westman (1985), the UK DOE Draft Guidance (1994) submit that EIA systems should mature towards inculcating an early consideration of scoping, that is, an early decision on what are the likely significant impacts of a project/action. While there is substantial agreement that scoping is important, there is nevertheless considerable discussion as to just what is significant.

The movement of transition towards EIA maturity is often gradual and fraught with problems. Nevertheless, the movement is generally positive, and this is apparent if one takes a closer look at the transition of Nigerian EIA systems from the reactive pollution control of the 1960s up till the relatively advanced environmental assessment of the present time.

7.2. The Changing Face of Environmental Regulation

Regulation is both an intention (such as rules set out in law) and a process (such as the permitting and inspection activities of an environmental enforcement authority) (Farmer, 2007). For a number of years now, the issue of the nature of environmental regulation has been under serious scrutiny from both a practitioner and academic perspective. Critical questions are being asked about the effectiveness and efficiency of existing regulations, and what can be done to make them effective and efficient or what alternative regulations that can be introduced that are better at achieving the desired outcomes. These questions have given rise to a number of factors.

There has been a changing understanding of the nature of environmental challenges. Either the problems of large-scale discharge of harmful pollutants have been controlled in many industrialized countries or the regulatory regimes for tracking these have been firmly developed (Farmer, 1997, 2005a). Focus has been shifted to wider issues of continual improvement, resource use, energy efficiency, product quality, etc (Farmer, 2007).

The accepted economic climate has changed. Globalization is an increasing challenge with companies demanding 'level playing fields' of competition, and a neo-liberal agenda is not only increasingly predominant in western Europe and the US, it has also come to dominate practices in some transition economies and others such as in South-east Asia (Farmer, 2007). This has eventually resulted in a number of pressures on regulatory activity, not least a need to justify the cost-effectiveness of action.

The social context has also changed, with the public demanding greater accountability of public bodies and a greater say in the decisions that are made. Alongside this there is increasing skepticism (and cynicism) of decision makers. In some countries, this is combined with a significant mistrust of scientific and technocratic methods of decision making more generally, which can be a particular challenge to environmental authorities.

According to Lidskog et al (2005), the idea behind regulation is not to eradicate risk, but to manage it and draw boundaries for the acceptable. There is also an increasing skepticism and lack of confidence in the regulatory systems due to publicized examples of the failure of regulation to deliver what the public are told it will do (Löfstedt, 2004).

According to Farmer (2007), the nature of environmental regulation also cannot be separated from wider developments in the thinking on governance in general. In particular, the nature of the nation state is under scrutiny, driven by international developments, globalization, demands for localized decision-making and a questioning of what governments should or should not be involved in.

7.2.1 Command and Control in Environmental Regulation

Command and control regulation is considered the preserve of the State as only it is assumed to have the capacity to be effective at commanding and controlling (Black, 2002). However, Baldwin (1997) defines command and control regulation as the exercise of influence by imposing standards backed by criminal sanctions. The force of law is used to prohibit certain forms of conduct or to demand positive actions or lay down conditions for entry into a sector. The role of the State in command and control regulation can be viewed in different ways (Baldwin and Cave, 1999; Lidskog et al, 2005). One of the ways is the ‘normative tradition’ which sees the State operating regulation in order to achieve a common good, that is, a series of publicly agreed desirable outcomes. This assumes that the free market will not deliver these outcomes and assumes that the actors in the process (regulators), with their expert knowledge, can be trusted to deliver the common good (e.g. environmental enforcement authorities delivering environmental protection). In contrast, an ‘interest-based’ view of regulation does not see regulation as acting for the interests of society as a whole. Rather, regulation is one of a series of different clashing interests. In this case, those with expert knowledge can be found within each of the competing interests. According to Farmer (2007), this is particularly evident today in the prominence of the debate over the appropriateness of environmental regulation in relation to the interests of business sustainability.

It should be noted that command and control regulation depends upon enforcement. Baldwin (1997) however, states that recourse to legal remedies is seen as inefficient and not cost-effective, particularly in comparison to other approaches, such as education and negotiation. It is very important to note that, in understanding the nature of regulation, it

is vital to take account of the widely different social, economic and development contexts of different countries. Across the world, the understanding of the role of the State varies, as do the expectations of social norms. Changing circumstances in developing countries like Nigeria also has to be addressed. For example, Jha and Whalley (1999) note that as environmental management systems in developing countries often rely on informal social norms, these systems break down under rapid population growth (such as urban migration). It should also be noted that transplanting western models of legal structures (rule of law and particularly that the government itself is subject to the rule of law) has often failed in developing countries due to economic issues, corruption, resources, political will and so on. Ogus (2004) noted that in developing countries, informal means of resolving disputes are often more important than formal ones. Environmental Regulation is therefore, affected by the social and other factors, which are associated with the particular part of the world, which is rooting for its implementation.

Adopting approaches other than command and control or making command and control more flexible is part of the changing nature of environmental regulation (Farmer, 2007). Measures such as emissions trading, environmental management systems and negotiated agreements are all part of environmental regulation.

7.2.2 Does Regulation Work?

The basis of the work of environmental enforcement authorities is environmental regulation (Farmer, 2007). The above question is not out of place. If regulation does not work, it is good to know if it is the fault of the regulation itself, the way it is implemented by the authorities or the fault of wider problems. It is important to know what can be done to improve the situation to achieve the desired environmental outcomes, if regulation does not work. However, Farmer (2007) looked into the above question from two perspectives – first, he asked whether regulation works for individual activities, or does it work when considered in its overall effect on the activities that are subject to it?

It is important to note that there are many companies that have complied and have actively changed their practices to meet the objectives of the regulation. However, non-compliance also does occur and, although sanctions might be imposed to encourage future compliance, but there are still cases of deliberate non-compliant behaviour that are either undetected or for which responsibility cannot be assigned. There is a wide range of

factors that can affect whether a company or individual might comply or not comply with an environmental regulation; these factors are summarized in Table 16 below.

Table 17: Factors Affecting Compliance Monitoring

Factors motivating compliance	Barriers to compliance and factors encouraging non-compliance
Economic Desire to avoid a penalty Desire to avoid future liability Desire to save money by using more cost-efficient and environmentally sound practices	Lack of funds Greed/desire to achieve competitive advantage Competing demands for resources
Social and moral Moral and social values for environmental quality Societal respect for the law Clear government will to enforce environmental laws	Lack of social respect for the law Lack of public support for environmental concerns Lack of government willingness to enforce
Personal Positive personal relationships between programme personnel and facility managers Desires, on the part of the facility manager, to avoid legal process Desire to avoid goal, the stigma of enforcement and adverse publicity.	Fear of change Inertia Ignorance about requirements Ignorance about how to meet requirements
Management Jobs and training dedicated to compliance Bonuses or salary increases based on environmental compliance	Lack of internal accountability for compliance Lack of management systems for compliance Lack of compliance training for personnel
Technological Availability of affordable technologies	Inability to meet requirements due to lack of appropriate technology Technologies that are unreliable or difficult to operate

(Source: US EPA, 1992)

A company, therefore, will comply if the cost of reducing emissions to the required standard is equal to, or less than, the expected penalty. From an economic perspective, such analysis is very rational. According to Heyes (2000), the consequence of the argument is that increasing the cost of non-compliance through more effective enforcement will increase compliant behaviour. However, it is not always the case that operators will make rational economic decisions, they may be subjected to other influences, for example, an operator might make a decision based on social or moral

expectations (refer to Table 14) even if the economic equation might suggest an alternative approach. Whatever the basis for non-compliance, it is necessary to develop enforcement strategies that tackle this behaviour (van Snellenberg and van de Peppel, 2002).

A recent literature review by Defra (2006c) concluded that there is a positive link between improved environmental performance and enhanced firm financial performance. However, the report considers that previous studies have not adequately addressed or proved casualty (i.e. that improved financial performance is the result of improved environmental performance), therefore the quality of the evidence is at best 'moderate'. Improved environmental performance can also be the result of other measures, such as environmental management systems or voluntary agreements (Defra, 2006d), so it need not be regulation that drives the performance or long-term financial consequences.

7.2.3 The Environmental Regulatory Cycle

The elements of command and control environmental regulation can be viewed in terms of a regulatory cycle as shown in Figure 32 below. The different include:

Legislative development, which involves the development of the regulations, which apply to different activities, and which environmental enforcement authorities enforce. This can include both primary and secondary legislation. It can also include the development of guidance to interpret this legislation.

Strategic planning, this involves the preparation of the strategies and plans that are required in order to implement legislation. These strategic plans might be required by law, or be developed by an environmental enforcement authority to guide its work. They could, for example, set out the overall principles by which its work might be undertaken, such as adopting a risk-based approach. Strategic plans can also be developed for the individual parts of the regulatory cycle (such as an inspection plan).

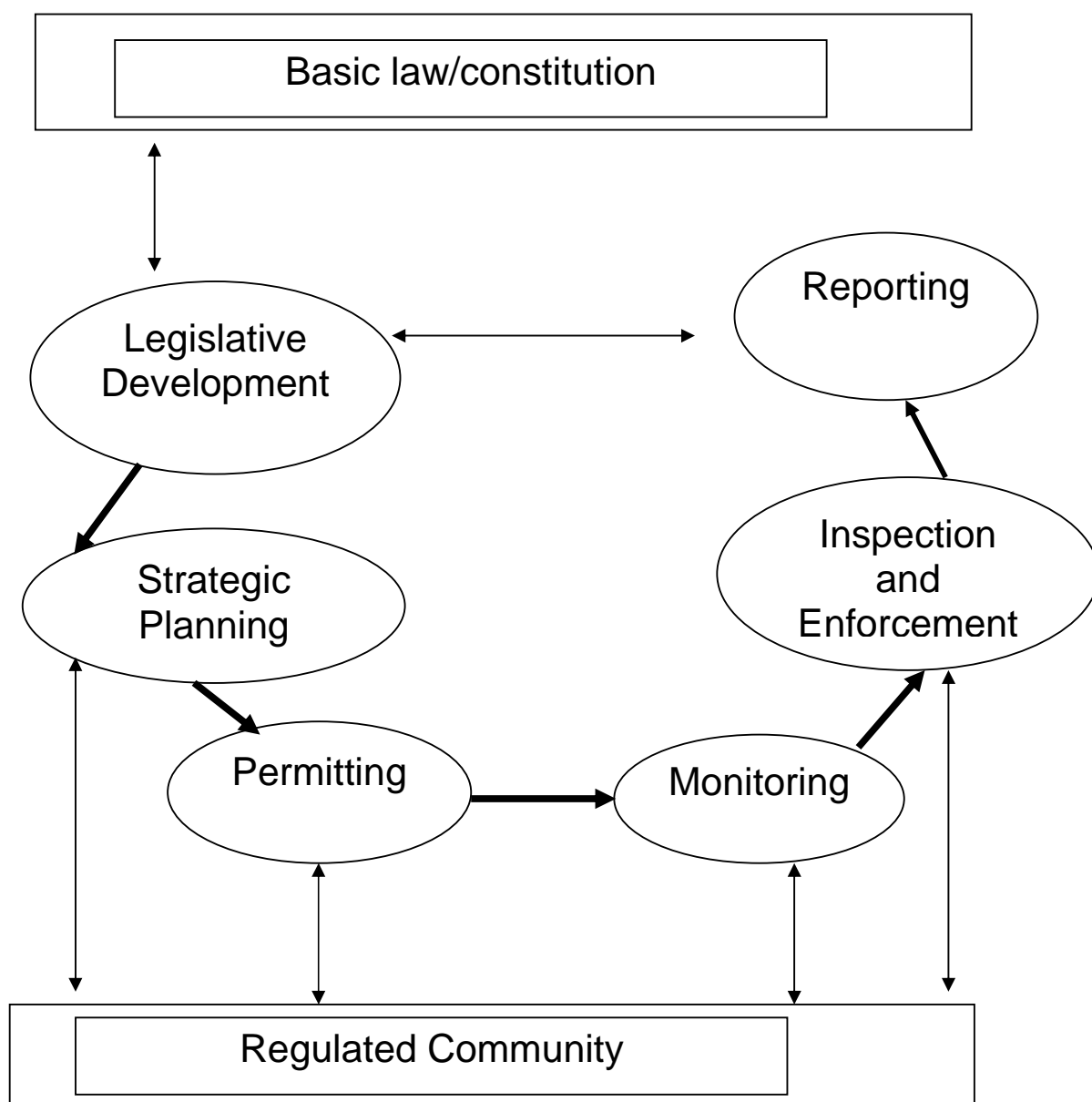


Figure 32: Elements of the Regulatory Cycle (Source: US EPA 1992)

Permitting involves setting conditions, which apply to individual activities and can involve a range of different procedures.

Monitoring includes a range of procedures and practices, both for individual installations and, where appropriate, operations (such as waste collection), and for more general environmental quality to determine whether permit conditions are complied with.

Inspection involves a range of supervisory practices whereby the environmental enforcement authority determines whether the activity complies with its legal requirements, such as those established in permits.

Enforcement involves a range of actions taken against activities that are found to be non-compliant.

Reporting procedures are those through which data derived mainly from permitting, monitoring and enforcement activities are made available to, for example, the public, government and other authorities.

The stages described above (see Figure 35) form a logical progression from establishing requirements in law to making sure these are implemented. However, the process should be cyclical.

Environmental enforcement authorities undertake various parts of the regulatory cycle. In some countries a single institution covers much of the cycle, while in others different parts might be the responsibility of separate institutions. In all cases it is essential that information is available throughout the cycle (within or between institutions).

According to OECD (2003a), a strategic approach is required in undertaking these various activities. This means that a compliance enforcement program should be developed which identifies the objectives of the regulatory activity (environmental outcomes) and the principles of its implementation (example, keeping costs to a minimum). If strategic approaches are not applied, the emphasis on different areas of environmental enforcement can be misplaced, resulting in ineffective environmental management, which has been noted for a number of Eastern European countries, Central Asia and Africa which can apply the law inconsistently and chaotically as a result.

According to Farmer (2007), an effective program would include the following:

- Creating enforceable regulations which will, if implemented, deliver the required outcomes;
- Identifying which activities require regulation;
- Understanding the regulatory culture of the activities to determine which approaches, instruments, etc., would be most appropriate;
- Ensuring that regulated activities clearly understand their obligations (such as through permits);
- Promoting compliance among these activities;
- Monitoring compliance with legal obligations;
- Taking action against non-compliance in a way that deters future violations;
- Ensuring an effective administration to undertake these activities;

- Monitoring the entire program and modifying it if necessary.

Fulton and Gilberg (1992) argue that for an enforcement program to be effective it requires the following characteristics:

- Enforcement programs should be strong enough to have an impact on the regulated community, to change behaviour and to deliver environmental compliance. Therefore, the program must reach enough violators to pose a credible threat, impose sufficient penalties and communicate its results to the regulated community.
- Enforcement programs must be efficient using all available tools – administrative, civil judicial, and criminal remedies, as well as adopting targeted approaches such as risk-based regulation of target resources.
- Enforcement should be creative, seeking to achieve results beyond compliance.
- Enforcement should be fair, providing confidence in the system.

The activities of an environmental enforcement authority should be transparent and accountable. The regulators are responsible to a variety of stakeholders, including their parent ministry, Parliament, other public bodies, the regulated community and the public.

Practical examples include:

- Regulations should be easily understood.
- Environmental enforcement authorities should publish (and report against) clear standards of service.
- Environmental enforcement authorities must provide an accessible complaints service.
- Environmental enforcement authorities should publish their enforcement policy, justify the choice of enforcement actions and be transparent in calculating administrative penalties.
- There should be provision of information and advice in a variety of methods.
- Environmental enforcement authorities should be accountable for efficiency and effectiveness of their activities.

7.3 The Evolution of Environmental Impact Assessment (EIA) in Nigeria

As stated earlier, Gibson (2002) has modeled the transition of EIA systems into four basic stages of evolution. The Nigerian evolutionary process shows some adherence to Gibson's model, though the following discussion would show that this is not always the case.

An analysis of papers by Dan-Habu (1996), Okorodudu-Fabura (1988) and Isichei (2000) shows that the initial focus of environmental awareness and legislation in Nigeria was on the petroleum industry. The initial belief in the country was that only the petroleum sector required close environmental monitoring. Environment legislations came in the form of pollution reduction measures that reacted to local problems within the petroleum industry. Several industry regulations—under the authority of the Petroleum Act, 1969—were promulgated to regulate the exploration of petroleum in Nigeria, and control pollution. The regulations were more reactive than proactive and bear a resemblance to the first of the Canadian EIA evolutionary stages noted by Gibson (2002).

Outside of the petroleum industry, however, there were as yet no environmental regulatory institutions or legislations. Environmental awareness was nonetheless gradually building up, largely owing to the country's participation in international environment conferences. Nigeria was one of the 114 governments represented at the historic United Nations 1972 Stockholm Conference, which addressed problems of the human environment. As an aftermath of this Conference, an Urban Development and Environment Division was created in the Federal Ministry of Economic Development in 1975.

Moreover, in the 1981–1986 Five-Year Development Plan, there was a provision that “feasibility and viability studies for all projects, both private and public should be accompanied by environmental impact assessments” (Okorodudu-Fabura, 1988). This provision was not, however, accompanied by any formalized environmental legislation. Nigeria also participated in the May 1982 10th Anniversary of the Stockholm Conference, which reaffirmed participants' commitment to the protection and enhancement of the quality of the human environment. In April 1982, Nigeria hosted the 69th Inter-Parliamentary Union Spring Meetings at which the Committee on Education, Culture and Environment adopted a draft resolution on the ‘State of the World

Environment Ten Years after the UN Conference on the Human Environment' and the steps to be taken for improvement including the fields of national and international legislation. Participation in such international conferences served to build awareness, policy and preliminary institutions.

The above build-ups to full-blown EIA (outside of the petroleum sector) in the 1970s and early 1980s find no place in Gibson's four-stage model. This is possibly because Canada did not have much of a build-up stage; they adopted EIAs very soon after the US in 1973. A build-up stage is nevertheless an important part of the EIA evolutionary process in Nigeria and possibly in many countries of Africa. For widespread applicability, it would be helpful if Gibson's ideas can be updated to include a build-up stage following what he (Gibson) describes as stage 1.

Sequel to the build-up of awareness came resulting in the formalization of Nigeria's environmental policies. This was jump-started only after the Koko incident in 1987. The Koko incident was an incident involving dumping of toxic waste in Koko, a southern Nigerian village, by an Italian ship. This caught the country unprepared, as it had neither effective environmental legislation nor environment controlling body to manage the incident effectively. As a reaction to the Koko incident, the Federal Environmental Protection Agency (FEPA) was established under Decree 58 of December 30, 1988. The next year, FEPA published its National Policy on the Environment. Then, the National Council on the Environment at its meeting in 1990 recognized EIA as an indispensable prerequisite for the effective implementation of the National Policy on the Environment, and directed that EIA be made mandatory for all development projects with effect from March 1991. The body also made environmental auditing mandatory for all existing industries and urged FEPA to establish guidelines and procedures for operation all over the country.

In 1991, the environmental regulations operated in the petroleum industry were maturing from reactive control measures to a proactive EIA system, which is, from the first to the second stage described by Gibson in his paper. This was occasioned by the release of Environmental Guidelines and Standards for the Petroleum Industry in Nigeria (EGAS) in 1991. In 1992, in response to the realization that all sectors of the economy required EIAs, two distinct legislations emerged (in addition to that already operating in the

petroleum industry), adding up to three separate Environmental Impact Assessment systems in the country. The two newer EIA systems, which made a first appearance in 1992 by legislation, involved a jump over stage 1 into stage 2. The jump was occasioned by the exigent situation (the Koko incident and international pressure) as well as the fact that the country was able to produce EIA legislations which were learnt from 20 years of evolution in countries such as the US and Canada.

The budding of three different EIA systems in 1992 is a matter that would generate some curiosity. An explanation is derivable from the process of evolution of the different systems. As earlier stated, the country's first EIA system (for the petroleum industry) evolved out of guidelines, standards and procedures for petroleum industry environmental control since the late 1960s. Over a period of 20 years, the EIA system in this industry evolved (in a manner quite in keeping with Gibson's model) into what that author describes as stage 2. By contrast, the Town Planning EIA system promulgated into law in 1992 was not the result of a long evolutionary process and did not pass through Gibson's first stage; it was more or less jump-started by legislation and bears resemblance to the UK EIA system which was compulsorily created by an EU directive in 1988. Prior to the promulgation of the enabling decree, the urban and regional planners had operated various regulations for development control, which were usually derived from the UK Town Planning system. When under compulsion from the EU, the UK enacted its Town and Country Planning Regulations 1988 (which covers development activities, and specifies town planners as the principal environment assessors); Nigeria also developed a similar legislation in 1992. The third EIA system (the EIA Decree no. 86) was also jump-started into Gibson's stage 2 by legislation in 1992. This system more or less follows the pattern of the US NEPA Act.

The result was three independent systems: one for the petroleum sector (governed by the Directorate of Petroleum Resources, DPR), another for the urban and regional planner's development control (governed by local government councils and the town planning divisions of the State Ministries of Lands), and yet another which attempts to span all sectors (governed by the FEPA). By 1992 all the three systems had in one form or the other advanced legislations stipulating proactive pollution control with measures including impact assessment, mitigation and project approval. Consequently at this point,

all three systems came into the second of the stages of EIA evolutionary transition described by Gibson (2002).

Sequel to 1992, FEPA issued procedural guidelines in 1995, while the DPR updated its guidelines in 1999. To date, no common procedural guidelines have yet been issued to regulate EIA practice for the urban and regional planners. The manner in which Nigeria's systems have developed (jump-starts rather than gradual development from reactive to proactive measures) suggests that some modification of Gibson's model would perhaps offer a truer picture of evolution in Nigeria.

7.4 The State of the Art application of Environmental Sustainability Tool in Nigeria: Environmental Impact Assessment (EIA) Practice in Nigeria.

Nigeria is a large, developing country, blessed with resources but subject to environmental degradation. Typical examples of environmental degradation are deforestation, soil erosion, flooding, and industrial pollution. Before the enactment of the Environment Impact Assessment (EIA) Decree No. 86 of December, 1992 (Federal Republic of Nigeria 1992a), detailed analysis of the biophysical and socioeconomic impacts of major development projects were to a large extent ad hoc, fragmented, or in some instances nonexistent. Spurred by growing environmental awareness in many parts of the world, recognition of EIA as a tool for better environmental protection, management, and environmental sustainability at the national level became evident in the early 1980s, starting with the Fourth National Development Plan (1981–1985).

This plan proposed the development of environmental impact statement (EIS) in feasibility studies for all projects (private and public) and stipulated that an EIS should include plans to mitigate adverse environmental effects of a project. Also, for the first time in Nigerian development planning, a section on environmental planning and protection was included. The need for EIA was reiterated at a seminar on Environmental Awareness for National Policy Makers organized by the Federal Ministry of Housing and Environment in 1981 (Federal Ministry of Housing and Environment 1982).

Similarly, various national documents on environment, construction, and agriculture policy recognized the use of EIA as a strategy for achieving sustainable development. Many academicians wrote of the need for EIA, and grassroots activists agitated for restitution in Nigeria's oil producing areas (the Niger Delta). Consequently, some form of

EIA studies started around the mid-1980s in the oil industry. Related developments were observed in land use planning and development permit approval in states such as Lagos and Bendel (Olokesusi 1992a). Nonetheless, there was never a systematic, legal and institutional framework for EIA until the promulgation of Decree No. 86 of 1992. This chapter assesses this EIA legislation and procedure in the light of the projects that have been subjected to full EIA since 1994.

7.4.1 Legal Provisions for EIA

Federal Environmental Protection Agency (FEPA) Decree No. 58 of 1988 aptly can be described as the forerunner of the 1992 EIA law. This is because Section 5 of FEPA Decree No. 58 charges the Agency with the responsibilities of (1) environmental protection and management; (2) setting environmental guidelines and standards, and (3) monitoring and enforcement of compliance with environmental measures. Decree No. 86 was enacted by FEPA, after which a “Guideline for EIA Procedure” was also issued by the agency in August 1994 (FEPA 1994). The agency organized two seminars in October 1994 and February 1995 to review the decree and raise awareness of it.

The EIA Decree requires that a proponent, whether in the public or private sectors of the economy, receive FEPA's approval before proceeding with a project. Section 63(1) of the decree defines project as “a physical work that a proponent proposes to construct, operate, modify, decommission, abandon, or otherwise carry out or a physical activity that a proponent proposes to undertake or otherwise carry out.”

The EIA Decree defines environment to mean the “components of the Earth,” and it includes:

- Land, water, and air, including all layers of the atmosphere;
- All organic and inorganic matter and living organisms; and
- The interacting natural systems that include components of land, water, air, and all organic and inorganic matter and living organisms.

This definition encompasses the socioeconomic and biophysical attributes of the environment. According to Section 4 of the Decree, an EIA is expected to cover at least the following matters:

- a description of the proposed activities;

- a description of the potential affected environment including specific information necessary to identify and assess the environmental effect of the proposed activities;
- a description of the practical activities, as appropriate;
- an assessment of the likely or potential environmental impacts of the proposed activity and the alternatives, including the direct or indirect, cumulative, short-term and long-term effects;
- an identification and description of measures available to mitigate adverse environmental impacts of proposed activity and assessment of those measures;
- an indication of gaps in knowledge and uncertainty, which may be encountered in computing the required information;
- an indication of whether the environment of any other state or local government area (LGA) or areas outside Nigeria is likely to be affected by the proposed activity or its alternatives; and
- a brief and nontechnical summary of all the information provided.

The EIA report—which is expected to include proposed measures to be undertaken by a proponent to mitigate or ameliorate the negative environment effects—shall be submitted to the agency for approval. If approved, an environmental assessment statement and certificate of approval shall be issued by the agency. Penalty for contravention of Section 4, i.e., noncompliance, is either a fine or imprisonment, but not both. For an individual, the penalty is a fine of up to N100, 000 (U.S. \$1,250.00) or a 5-year jail term. In the case of corporate bodies, penalty is a fine not less than N50, 000 (U.S. \$625.00) but not more than N1.0 million (U.S. \$12,500.00).

7.4.2 Projects Subject to EIA

Projects have been categorized into three types, based on six criteria: project magnitude; extent or scope; duration and frequency; associated risks; significance of impacts; and availability of mitigation measures for associated and potential impacts identified (see Figure 36 below).

Category 1: Projects where EIA is mandatory (see Appendix 3).

Category 2: These are the same type of projects as in the mandatory list (see Appendix 3), except that the size and/or capacity of the former is less than those of category 1. The

decree states that project(s) listed in category 2, but located in environmentally sensitive areas (ESAs), will be assigned to category 1 and therefore subject to full-scale EIA.

For category 2 projects that are not located in an ESA, a full-scale EIA may not be mandatory, but a partial EIA is required. In this case, mitigative measures or changes in project design (depending on the nature and magnitude of the environmental impacts as well as further actions) may also be required from the proponents.

Category 3: These projects are essentially programs. Examples are institutional development, education, health, and family programs. These programs shall be subject to full EIA process if they involve physical outputs such as buildings and ancillary facilities. However, the law exempts projects from the EIA process. EIA of a project shall not be required where:

- in the opinion of the agency (FEPA), the projects is in the list of projects where the President, Commander-in-Chief of the Armed Forces or the Council is of the opinion that the environmental effects of the project are likely to be minimal;
- the project is to be carried out during national emergency for which temporary measures have been taken by the Government; and
- the project is to be carried out in response to circumstances that in the opinion of the agency, the project is in the interest of public health or safety.

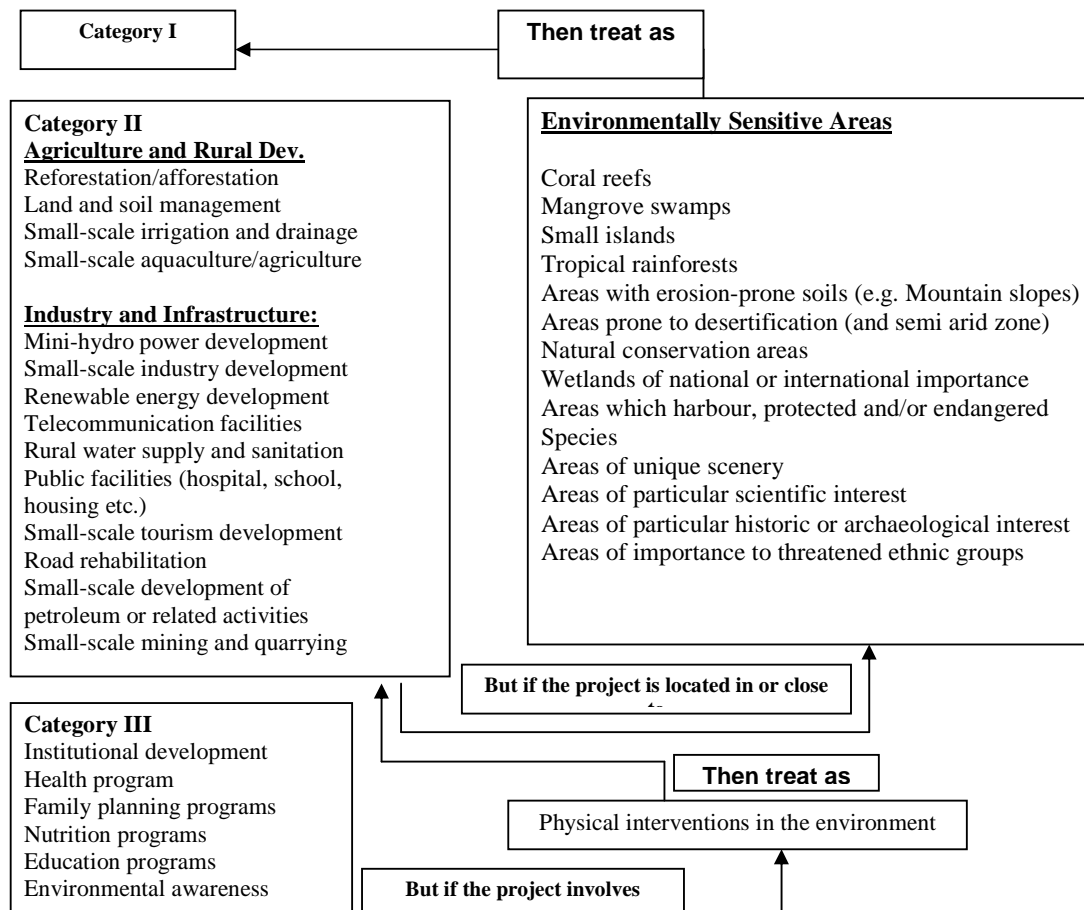


Figure 33: Checklist for the categorization of Projects in EIA (Source: FEPA, 1994)

For greater certainty, where the federal, state, or local government exercises power or performs a duty or function for the purpose of enabling projects to be carried out, an environmental assessment may not be required if:

- the project has been identified at the time the power is exercised the duty or function is performed; or
- the federal, state, or local government has no power to exercise any duty or perform functions in relation to the projects after they have been identified.

7.4.3 Administrative Arrangements for EIA in Nigeria

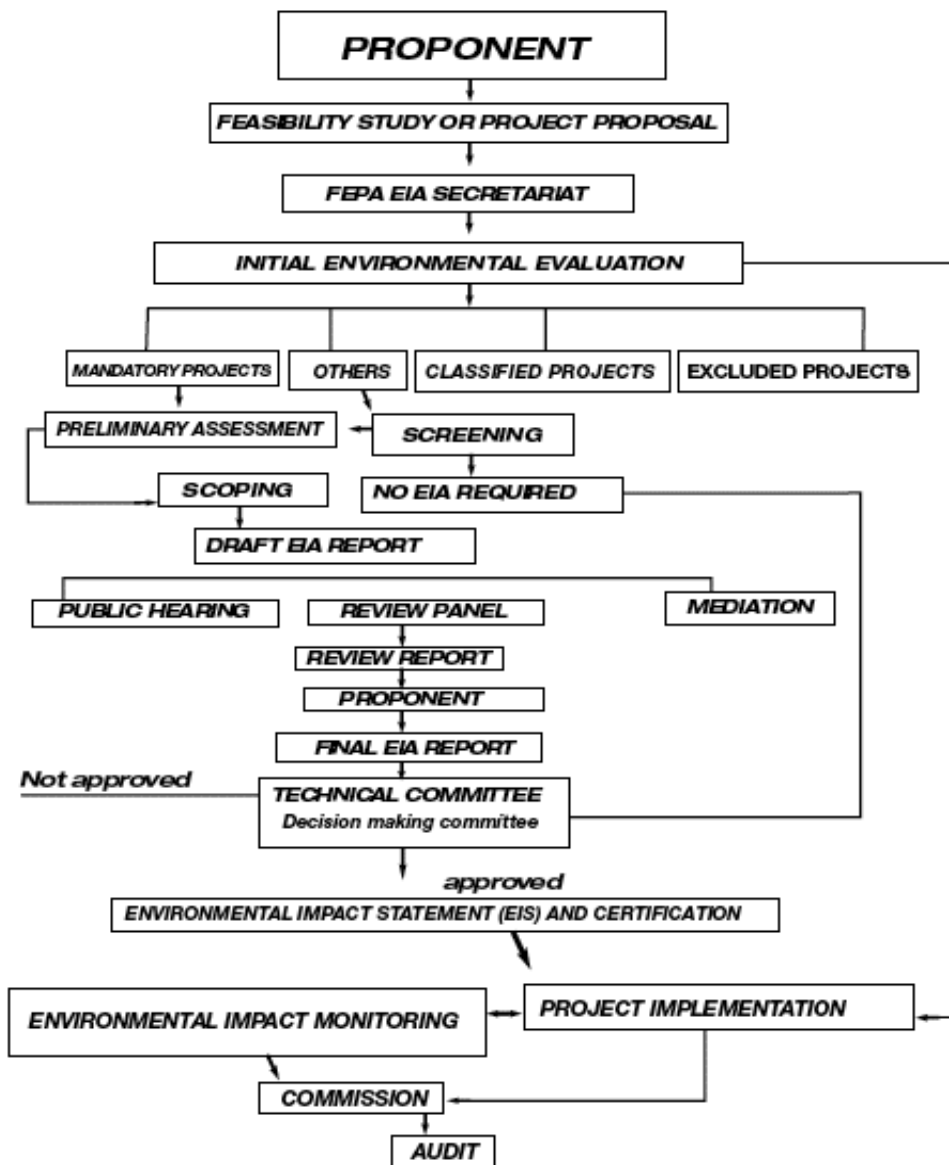


Figure 34: EIA Procedure in Nigeria (Source: FEPA, 1994)

FEPA has the overall responsibility to administer and enforce the provisions related to EIA. It is, however, envisaged that various other government supervising and approving agencies would assist by ensuring that prescribed activities falling within their areas of jurisdiction undergo EIA prior to approval and implementation. These agencies could be operating at federal, state, or local levels.

7.4.4 The EIA Procedure

The EIA procedure adopted in Nigeria is that published by FEPA in August 1994. This procedure indicates the steps to be followed from project conception to commissioning to

ensure that the project is implemented with maximum consideration for the environment. The steps to be followed in the EIA procedure are shown in Figure 34 above. Guidelines for some sectoral projects have been prepared by the agency to assist proponents and their consultants.

7.4.5 EIA Guidelines in Nigeria for Environmental Sustainability

To facilitate adoption of the process, and promote environmental sustainability in Nigeria as a whole, FEPA has produced “EIA Guidelines” for the following sectoral projects:

Petroleum and Petrochemicals sector (Oil and gas exploration and production (on-shore), Oil and gas exploration and production (off-shore), Pipeline construction, Petroleum refining); Dredging sector; Manufacturing sector; Chemicals and allied Industries sector; Agricultural and Rural Development sector (Agricultural land management, Drainage and irrigation, Flood management, Dams and reservoirs); Infrastructural development sector (Roads and highways, Urban development, Coastal development); and Solid Mineral Mining and Development sector (Extraction and beneficiation)

7.4.6 Screening

Any proponent embarking on any major development project shall notify FEPA in writing by the submission of a project proposal. The project proposal shall include all relevant information available—including a land-use map in order for it to move to the next stage which is screening.

The submission of a project proposal (to the agency) signifies the commencement of the EIA process. The Agency, on acknowledging the receipt of a proposal, shall officially register the project proposal and issue a registration number. It will also supply the proponent with the necessary documentation, general guidance, contacts, and any other available support which facilitates a smooth EIA process.

This is the initial environmental examination (IEE) to be carried out by the agency to assign the project or activity into one of the three categories as earlier indicated. The agency, after adequate screening, shall provide appropriate advice (screening report) in writing to the proponent within 20 working days of receipt of proposal.

7.4.7 Scoping

On receiving the screening report from the agency, the proponent shall carry out a scoping exercise to ensure that all significant impacts and reasonable alternatives are addressed in the intended EIA. Possible outcomes are as follows:

- i) Terms of reference (TOR) including the scope of the proposed EIA shall be submitted by the proponent, on which the agency may demand a preliminary assessment report and any additional information to assist it in vetting the scope and the TOR of proposed study.
- ii) Public review/hearing may be arranged by agency, depending on public interest in the project.
- iii) The proponent may be required to undertake specific studies to fill data gaps, if available data is inadequate.
- iv) Afterward, the proponent shall undertake EIA study according to the TOR agreed with FEPA.

7.4.8 Draft Final EIA Report and Review Process

After the study to be funded by the proponent, a draft final report shall be submitted to the agency for review. The agency will determine the form that review of the EIA report will take after it might have been evaluated. There are four variants of the review process, namely, in-house, panel, public, and mediation. Site visits at this stage may be initiated by the agency and shall within 30 working days inform the proponent the selected method of review.

After the review process, the agency shall within 6 months summarize comments and provide same to the proponent in writing. The proponent shall make and effect amendments as may be required and include them in the final EIA report. The agency determines which project is to be approved or disapproved based on various conditions as stipulated by the decree guiding the operation of the agency. In a situation where approval is being granted, a follow-up program (e.g., mitigation and compliance monitoring plan) may be established for specific tasks to be undertaken in the construction, operational, and commissioning phases of the development.

7.5 Final EIA Report

A proponent is expected to submit the final EIA report to the agency within 6 months of the receipt of the agency's comments; failure of which the agency may request for a new EIA study.

Technical Committee/Decision-making

A technical committee of FEPA headed by its Director-General is the body that approves EIAs. After due consideration, the technical committee shall consider and approve the issuance of an EIS and certificate, within 60 days of the receipt of the final EIA report by the agency. On receipt of these two permits, the proponent is still required by the Nigerian Urban and Regional Planning Decree 88 of 1992 to submit same with their applications for development/construction permit. Once the latter is issued, development/construction can commence.

In addition for public sector projects, copies of the EIS and certificate shall be deposited with the National Planning Commission so that the project can be admitted into the National Rolling Plan. A rolling plan is a 3-year plan of public sector investments and projects, where unfinished aspects of the plan in the first year are rolled over for completion in the succeeding year and so on.

Project Implementation

The proponent after certification will go on to implement the project in accordance with all the stipulated mitigation measures, conforming to the stipulated specifications as contained in the final EIA report. If the project is however, not commissioned within the validity of the certificate, the agency may require a new EIA study.

Mitigation compliance monitoring (prior to commissioning)

The Agency, during the implementation of the project, shall monitor the progress of the project from site preparation to commissioning to ensure compliance with all stipulated mitigation and project specifications.

Environmental Auditing (Post-commissioning)

This is a periodic assessment of the positive and negative impacts of the project by agency staff with a view to improving the EIA process.

7.6 Discussions

7.6.1 Environmental Assessment (EA) as a Tool for Sustainable Development

Environmental assessment (EA) is a systematic procedure to examine how a particular activity has and will impact the environment. EA could provide a tool for integrated policy development whether at the local, national, or global level where economic, environmental and social development goals could be reconciled. For analyses of economic development, including trade, several forms of this basic procedure have been, and continue to be, developed for different applications and for different levels of decision-making.

7.6.2 Project-based EA

Until about 30 years ago, nature was generally assumed to offer an infinite supply of physical resources to be exploited as required for human benefit. Large development projects were assessed purely in financial terms, without taking into account environmental and social externalities and market distortions. Since the early 1970s, however, there has been increased international recognition of the inseparability of the environment and both economic and social development.

In recent years, despite the adoption of a multitude of multilateral environmental agreements (MEAs) and the introduction of national environmental policies by most countries, the world remains far from achieving many of the sustainable development goals that governments set for themselves in Agenda 21 and the Rio Declaration of UNCED in 1992. Alongside growing awareness of the need to address environmental concerns, EA methodologies were developed and introduced in the early 1970s to help screen large development projects against environmental criteria in order to help identify and mitigate negative environmental impacts of those projects. Since then, requirements for EA to be conducted for major projects have been incorporated in the legislation of an increasing number of countries and most development assistance institutions and multilateral banks incorporate EAs as part of their lending operations.

Principle 17 of the 1992 Rio Declaration states that “environmental impact assessment, as a national instrument, shall be undertaken for proposed activities that are likely to have a significant adverse impact on the environment and are subject to a decision of a competent national authority.” Today, the need to undertake EA for development projects

is universally recognized by governments, and increasingly this is being done. But more significantly, through the development and use of strategic environmental assessment (SEA), the environmental impacts of broader sectoral activity — both current and projected — are now beginning to be assessed so that environmental considerations can be effectively integrated in national macroeconomic and sectoral policies, plans, and programs.

Although there is no internationally agreed definition of SEA, it is generally defined to be a process for identifying and assessing the environmental consequences resulting from the implementation of policies, plans, and programs (UNEP, 1996). While it is still useful to undertake ex post SEA on existing policies, plans, and programs, it should be emphasized that for such an assessment to be effective, it is essential that it be undertaken ex ante on proposed policies, plans, and programs (UNEP, 1996). Furthermore difficult to limit SEA to only address environmental considerations in the narrow sense of the word without including social and economic considerations, as this could be met by resistance from policy- and decision-makers. Including the development dimension may, therefore, prove to be a more acceptable approach to take in order to allow for a balanced assessment process.

7.6.3 Strategic Environmental Assessment (SEA) to Manage National Trade Activity

Trade-driven activities are unlikely to proceed in a sustainable manner when economic and trade policies have been developed without taking environmental considerations into account. Environmental concerns must be integrated into trade policies and complementary environmental policies must be put in place to ensure that environment and trade policies are mutually supportive and that economies evolve along a sustainable development path. SEA can guide this process by presenting decision-makers with policy options that can advance trade objectives while protecting natural and environmental resources.

Many governments are now committed to developing mutually supportive trade and environment policies. Increasingly, they recognize that SEA has a central role to play in catalyzing a process to develop economically efficient and cost-effective trade and environment policies. These efforts will certainly require increased capacity of governments to assess the impacts of trade liberalization policies on their natural and

environmental resources and development priorities, and to formulate national policies and measures to address negative impacts and strengthen positive ones.

The integration of environmental considerations in macroeconomic policies in general and trade policies in particular, raises a number of concerns, especially for developing countries. Satisfying environmental objectives through domestic environmental policies has cost implications at the national level. Their implementation raises concerns about market access and competitiveness since they will raise costs for nationally produced goods relative to similar goods produced in other countries where such policies remain absent. Because globalization creates pressures to maintain competitiveness, reducing government inclinations to improve national environmental standards, many observers believe that nations can improve such standards only through a multilateral process where similar measures are adopted by competing nations (Zarsky, 1997). This suggests that multilateral trade and environment policy regimes must play a stronger and complementary role in promoting sustainable development, otherwise proactive policies at the national level may not materialize.

There continues to be considerable resistance, primarily from developing countries, to integrate environmental considerations into multilateral trade agreements. This resistance stems from concerns developing countries have that environmental standards may be used as a form of disguised protectionism allowing countries to discriminate against imports of like products based on the environmental characteristics of the process and production methods (PPMs) used to produce them, in order to shield their domestic industries from foreign competition. For many products, because improvements in the environmental performance of PPMs are more readily achieved and their costs more easily absorbed by developed countries, developing countries fear that the introduction of environmental measures into multilateral trading systems will ultimately result in reduced market access for their exports.

Although there continues to be a lack of international consensus on whether and how to integrate environmental considerations in multilateral trade negotiations and policies, many countries now seek to independently perform EAs of trade agreements. Countries are increasingly recognizing the importance of conducting these assessments, particularly *ex ante* assessments, so that they will be aware of the national implications of prospective

trade agreements. This would permit them to develop clear strategies for the negotiation of multilateral trade agreements.

7.7 Controversies Surrounding EIA Implementation in Nigeria

Undoubtedly, the formal introduction of EIA is a welcome development to those concerned about the environment. The formal launch of the decree and public involvement, though modest, is a step in the right direction, especially in the light of social conflicts, destruction, and tensions in the petroleum and mineral-producing areas like the Niger Delta region (Olokesusi, 1995). However, there are those who consider the decree to be another bureaucratic milestone, aimed at slowing down development under harsh economic and political regimes. Between 1994 and the end of 1995, 25 projects were either screened or fully assessed. Some of the major projects assessed and reviewed by independent panels include:

- Mobil Capital Dredging of Approach Channel Off-shore Bonny, Rivers State;
- Mobil Usari Production Facility, in Akwa Ibom State;
- Nigerian Natural Liquefied Gas (NLNG) Project in New Finima, Rivers State;
- Western Metal Products Company (WEMPCO) in Ikom, Cross River State;
- Shell Natural Liquefied Gas Project, in Toru, Rivers State; and
- Mobil Natural Liquefied Gas Project, in New Finima, Rivers State.

However, only nine Environmental Impact Statement (EIS) certificates were issued during the same period. The remaining 16 were not certified due to poor quality and inability of proponents to submit the revised EIA reports within specified time frames. Perhaps expectedly, there have been some controversies, both procedural and institutional.

The controversy surrounding the EIA report submitted to FEPA by Western Metal Products Company Limited (WEMPCO) on their proposed wood processing factory in Cross River State has raged since early 1996. The Technical Director of the Nigerian Conservation Foundation (NCF) an affiliate of the World-Wide Fund for Nature, joint promoters and managers of a national park where WEMPCO is being sited, claimed that the proponent was forced to prepare an EIA report (*the Guardian* August 10, 1997, p. B8). Furthermore, environmental NGOS and other stakeholders claimed that WEMPCO's EIA is poor in conception and methodology and that it underreports the area of forest concession granted to it.

There has been some conflicts between FEPA (now FMENV) and the traditional oil and gas industry supervisory agency—the Department of Petroleum Resources (DPR), established to supervise oil and gas operations in Nigeria by the provision of Petroleum (Drilling and Production) Regulations Act of 1969. Operators in the oil and gas industry have been complying with this department's regulations on EIA but now must comply with that of FEPA as well. This situation prompted the Chief Executive of Shell Oil Company in the country to point out the costs and delays associated with the dual requirements (Anderson 1996).

7.7.1 Some Pitfalls Observed in Nigerian EIA Practice

Some observers have criticized the language of the decree for its obscurity and poor grammar. Section 1 (a) illogically requires “an assessment of the environment on the activity” rather than “an assessment of the activity on the environment.” Many of the internal cross-references in the legislation are erroneous. These include sections 26(a), 27, 28, 29, 47(a), 53(1) and (2), 54(1) and (b), and 55(1), Section 12 is missing entirely (Ajai, 1994; Olomola, 1996).

Another failure is the reactive nature of the legislation. The EIA process commences after notice is given of a project, despite the absence of regional, urban, and rural development plans by which probable, maximum capacities of planning areas might have been determined. Indeed, Decree 86 contains no provisions for proponents to assess different locations and select the optimum from a socioeconomic, biophysical, or political context. Most proponents select project locations and sites without regard to alternatives, prior to seeking EIA approval.

The exclusion clause for some projects is a source of concern, because it might be misused by the ruling class. This author is of the opinion that the EIA report of the controversial Nigerian Liquefied Natural Gas Project would not have been approved if not for the keen interest shown by the government in the wake of the Ogoniland crisis.

In most democratic societies, the significance of public input into decision-making is recognized; the EIA process is no exception (Burdge, 1990). But the provision for public involvement in the Nigerian EIA Decree is not broad enough.

7.7.2 Lack of Public Participation

The public is not given an opportunity to comment on the screening report of any of the projects subjected to full EIA. Rather, public involvement takes place after the submission of the draft final EIA report. During this stage, members of the public are allowed to peruse and comment on the reports within 21 working days on the displayed reports.

So far, review panels have been used to evaluate draft final EIA reports, and the public has had access to such meetings. Still, some members of project communities contend that consultants for proponents are always in favour of their clients, and hence can not produce unbiased EIAs. However, from this author's participation, as a member of the FEPA review panel for Mobil Capital Dredging of Approach Channel (off-shore) Bonny in June 1997, it was obvious that FEPA expects a reasonably balanced assessment process with adequate stakeholder involvement.

The admission of an approved public sector project into the National Rolling Plan is desirable, because it would be a means of measuring progress, apart from being recorded in the National Data Bank. There is the need for FEPA to equally register approved private sector projects in view of the fact that this sector contributes about 77% of the country's gross domestic product annually (Central Bank of Nigeria, 1994). Its importance in the economy therefore should not be underestimated.

Even though the decree effectively came into force more than 2 years ago, access to the screening and final EIA reports as well as reports of the review panels are restricted. The latter is available only to a proponent. Much as we recognize the sanctity of commercial and other trade secrets, it is important that the public should have access to all information on projects subjected to full EIA. Indeed a learning effect is expected to occur in the process of public scrutiny.

7.8 Conclusion

In conclusion, it is relevant to point out that development permit or project approval involves more than one level of government. FEPA is a federal government agency, and only state and/or local level development control departments can issue a development permit. In other words, even if FEPA approves the EIA for a project, the proponent is

required to resubmit the building or development plan application along with the Environmental Impact Statement (EIS) and certificate for approval in conformity with the Urban and Regional Planning Decree 88. For industrial projects, approval may have to be given by the Federal Ministry of Industries, in addition to the approval by the development control department, after FEPA's approval of the EIA report. An issue, therefore, is the level of collaboration between FEPA and the development control departments on the one hand, and how to streamline the two laws on the other, to reduce overlap and areas of conflict, and achieve environmental sustainability in Nigeria through the EIA process.

Chapter Eight

Environmental Policy in Nigeria: Environmental Standards, Compliance and Monitoring

This chapter enumerates the various environmental laws that have been enacted in the country for the purpose of proactive environmental protection. It also looked into the various environmental standards which are applicable to all the industries in Nigeria, and the extent to which these laws and standards are complied to and monitored. This chapter will also try to assess Nigeria's Progress on Agenda 21 since Rio conference as regards Compliance/Monitoring/Environmental Standards.

8.0 Introduction

Countries all over the world, particularly the developing ones like Nigeria, face severe environmental degradation that appears to be threatening their long-term development prospects. This is so because they rely upon the use of natural resources in their growth and development process. These natural resources are being used up in a manner that appears wasteful and, thereby, forecloses options for development in the future (Oyeranti, 2001). Interestingly, however, the issue of the protection of the environment became a topical debate in Rio de Janeiro, Brazil in June 1992. The World Bank estimates that more than a million people in Sub-Saharan Africa still live in acute poverty and suffer grossly inadequate access to resources required to give them opportunity for economic development. The immediate struggle for basic survival by the poor in various countries undermines the legitimate concerns of environmental protection and leads to consequent pressure on the environment, with attendant pervasive degradations (Hisham, 1993).

Recently, the concern for the environment was re-echoed at the World Earth Summit in Johannesburg, South Africa in August, 2002. As part of the output of the Summit, a blue-print tagged: "The Johannesburg Plan of Action" was adopted. The document prescribed actions for tackling identified social, economic, political and environmental problems. The Action Plan contains among others, a commitment to halve the proportion of people without access to safe drinking water and sanitation worldwide by the year 2015; the same year targeted by leaders at the United Nations Millennium Summit to reduce by half, the number of people living in poverty (Adenuga, 1999). These are by no means laudable objectives mapped out by the comity of nations in conjunction with the

United Nations through the Millennium Development Goals (MDGs), to assist developing countries like Nigeria prevent the obstacles to its sustainable development.

8.1 The Basis of Environmental Policy in Nigeria

The basis of environmental policy in Nigeria is contained in the 1999 Constitution of the Federal Republic of Nigeria. Pursuant to section 20 of the Constitution, the State is empowered to protect and improve the environment and safeguard the water, air and land, forest and wildlife of Nigeria. In addition to this, section 2 of the Environmental Impact Assessment Act of 1992 (EIA Act) provides that the public or private sector of the economy shall not undertake or embark on projects or activities without prior consideration of the effect on the environment.

The Federal Government of Nigeria has promulgated various laws and Regulations to safeguard the Nigerian environment, and to ensure environmental sustainability of the Nation. This includes the Federal Environmental Protection Agency Act of 1988 (FEPA Act). The following Regulations were made in pursuant to the FEPA Act:

- i) National Environmental Protection (Effluent Limitation) Regulations ;
- ii) National Environmental Protection (Pollution Abatement in Industries and Facilities Generating Wastes) Regulations;
- iii) National Environmental Protection (Management of Solid and Hazardous Wastes) Regulations;
- iv) Environmental Impact Assessment Act of 1992 (EIA Act); and
- v) Harmful Wastes (Special Criminal Provisions etc.) Act of 1988 (Harmful Wastes Act).

The Federal Ministry of Environment (FMEV) administers and enforces environmental laws in Nigeria. It took over this function in 1999 from the Federal Environmental Protection Agency (FEPA), which was created under the FEPA Act. FEPA was absorbed and its functions taken over by the FMEV in 1999. The Federal Ministry of Environment has published several guidelines for the administration of the FEPA and EIA Acts and procedures for evaluating environmental impact assessment reports (EIA Reports).

Other regulatory agencies with oversight functions over specific industries have also issued guidelines to regulate the impact of such industries on the environment such as the Environmental Guidelines and Standards for the Petroleum Industry in Nigeria (EGASPIN) 2002, published by the Department of Petroleum Resources (DPR).

However, in pursuant to the FEPA Act, each State and local government in the country may set up its own environmental protection body for the protection and improvement of the environment within the State. Each State is also empowered to make laws to protect the environment within its jurisdiction. All the States have environmental agencies and State laws; e.g. Abuja, the Federal Capital Territory has issued the Abuja Environmental Protection Board (Solid Waste Control/Environmental Monitoring) Regulations 2005 ("the Abuja Environmental Protection Board Regulations") which principally governs solid waste control in Abuja.

In Lagos State, the Lagos State Environmental Protection Agency Law was enacted to establish the Lagos State Environmental Protection Agency (LASEPA). LASEPA's functions include monitoring and controlling the disposal of waste in Lagos State and advising the State Government on all environmental management policies. Lagos State has also enacted the Environmental Pollution Control Law, to provide for the control of pollution and protection of the environment from abuse due to poor waste management practices. Akwa Ibom State has enacted the Environmental Protection and Waste Management Agency Law, which established the Environmental Protection and Waste Management Agency. This Agency is charged with responsibilities which include identifying and proffering solutions to environmental protection problems in Akwa Ibom, and monitoring and enforcing environmental protection standards and regulations.

8.2 The Approach of Environmental Agencies/Bodies to Enforce Environmental Laws in Nigeria

The EIA Act was promulgated principally to enable the prior consideration of environmental impact assessment of public or private projects. Any person planning a project/activity which may have an impact on the environment is statutorily required to prepare an EIA Report, and the Report must set out the potential impact of the activity on the environment and plans for preventing/mitigating the same, as well as clean up plans. All such Reports must be approved by the FME. Attached to the EIA Act is a schedule of activities and industries for which environmental impact assessments are mandatory. These include Agriculture, Airport, Drainage and Irrigation, Land Reclamation, Fisheries, Forestry, Housing, Industry, Infrastructure, Ports, Mining, Petroleum, Power Generation and Transmission, Quarries, Railways, Transportation, Resort and Recreational Development, Waste Treatment and Disposal, and Water Supply.

Any person who fails to comply with the provisions of the EIA Act commits an offence and is liable on conviction, in the case of an individual, to a fine or to a term of imprisonment for up to five years; and fines are also imposed on guilty firms or corporations.

Furthermore, the FEPA Act empowers the FME to require the production for examination of any license or permit granted to any person, to enter and search any land or building, and to arrest any person whom they have reason to believe has violated any environmental regulation.

The approach of regulatory agencies is the prevention of environmental damages, the regulation of potentially harmful activities and the punishment of willful harmful damage whenever this occurs. The environmental agencies also adopt the approach of engaging individuals and communities at risk of potential environmental damage in dialogue. The EIA approval process adopted by the FME involves a system of public hearings during the EIA evaluation process and interested members of the public are invited to such hearings. The respective State environmental agencies in Nigeria, e.g. the Lagos State Environmental Protection Agency (LASEPA), also take the same approach.

8.3 Accessibility of Environment-related Information to Interested Members of the Public

Public authorities are statutorily required to inform the public of environment-related issues. The FEPA Act requires FEPA to collect and make available through publications and other appropriate means and in cooperation with public or private organizations, information pertaining to pollution and environmental protection regulations.

The EIA Act provides for the maintenance of a Public Registry for the purpose of facilitating public access to records relating to environmental assessments. The Lagos State Environmental Pollution Control Law requires the Ministry of Environment and Physical Planning to educate the general public on the types of disposal methods acceptable by the State Government for domestic and Industrial wastes. In addition under the LASEPA law, LASEPA is required to carry out public enlightenment exercises and educate the public on methods of environmental sanitation and management.

The Federal Ministry of Environment also issues guidelines from time to time for environmental impact assessments for different industries and it also has publications which inform the public of the prohibition of environmental pollution. Furthermore, members of the public and persons requiring clarifications on environmental issues can visit the offices of the FME or the relevant State environmental agency for environment-related information. As stated in question 1.2 above public hearings to which interested members of the public are invited is a key part of the approval process for EIA reports by the relevant agencies.

8.4 Nigeria's Environmental Permits

The different pieces of legislation on the protection of the environment contain provisions for the issuance of environmental permits. Such permits are required for all potentially environmentally sensitive activities and are typically granted by the FME and the relevant State agencies. Specific legislation on permits include the Radioactive Waste Management Regulations 2006 which provides that any person generating or managing radioactive waste must apply for and obtain a permit from the Nigerian Nuclear Regulatory Authority; the FEPA Act and the regulations made hereunder.

The National Environment Protection (Pollution Abatement in Industries and Facilities Generating Wastes) Regulations made pursuant to the FEPA Act provide that a permit will be required:

- for storage, treatment and transportation of harmful toxic waste within Nigeria;
- where effluents with constituents beyond permissible limits will be discharged into public drains, rivers, lakes, sea, or as an underground injection;
- when oil in any form shall be discharged into public drains, rivers, lakes, sea, or as an underground injection; and
- for an industry or a facility with a new point source of pollution or a new process line with a new point source. Such an industry or facility shall apply to the agency for a discharge permit.

Some permits are industry specific; e.g. in the oil and gas industry, the Directorate of Petroleum Resources (DPR) also regulates environmental issues, and operators in the industry are required to obtain the necessary permits.

The Environmental Guidelines and Standards for the Petroleum Industry in Nigeria (EGASPIN) 2002, published by the DPR provides that the Director of Petroleum

Resources shall issue permits for all aspects of oil-related effluent discharges from point sources (gaseous, liquid and solid), and oil-related project development⁶⁰.

The EGASPIN also provides that environmental permits shall be issued for existing and new sources of effluent emission. All projects in the oil and gas industry must be issued with the requisite environmental permits, and failure to procure the same may lead to penalties.

Relevant state permits are also required i.e. pursuant to the Abuja Environmental Protection Board Act (Solid Waste Control /environmental Monitoring Regulations 2005), all sponsors of major development projects in Abuja must submit to the Abuja Environmental Protection Board ("the Board") details of the project i.e. its nature and scope, the site and area of the project, the activities to be carried out and any other relevant information. Upon submission, the sponsor is issued an Impact Clearance Permit by the Board. In Lagos State, the LASEPA law requires any person manufacturing or storing chemicals, lubricants, petroleum products, cement and other material used in building, radioactive materials, or gases in residential or commercial areas to obtain a permit. The permits are typically not transferable as they are project specific. Where such permits are however transferable the consent of the regulator will be required prior to any such transfer.

Any entity or individual affected by a decision of an environmental regulator has a right of appeal under the relevant laws and regulations. The EGASPIN which is applicable in the oil and gas industry provides that an aggrieved party shall be free to seek remedy at courts/tribunals. The FEPA Act allows an aggrieved person to bring an action in the Federal High Court against the FMEV for any act done in pursuance or execution of any environmental law or of any public duties.

8.5 Environmental Audits or EIAs for Polluting Industries or Projects in Nigeria

Nigerian law makes it mandatory for EIAs and environmental audits to be carried out by polluting industries. The practice is that an EIA report must be prepared in respect of all major projects and approved by the FMEV and the environmental agency of the State in Nigeria in which the project is located. In addition, for oil and gas projects, the requisite environmental permit must be granted by the DPR.

⁶⁰ The Environmental Guidelines and Standards for the Petroleum Industry in Nigeria (EGASPIN) 2002 published by the Department of Petroleum Resources..

Some activities have been classified as mandatory study activities under the EIA Act. They include Agriculture, Airport, Drainage and Irrigation, Land Reclamation, Fisheries, Forestry, Housing, Industry, Infrastructure, Ports, Mining, Petroleum, Power Generation and Transmission, Quarries, Railways, Transportation, Resort and Recreational Development, Waste Treatment and Disposal, and Water Supply⁶¹. The effect of this is that no Federal, State or Local Government or any of their agencies shall exercise any power or perform any duty or functions that would permit the project to be carried out in whole or in part until the FME has approved the EIA for such a project.

Other legislation which requires EIAs is the Abuja Environmental Protection Board Act, which empowers the Board to request an EIA for a development project and the sponsor must submit reports to the Board from time to time. The Akwa Ibom State Environmental Protection and Waste Management Agency Act (EPWMA) empower the Agency to conduct pre and post EIAs of projects and make recommendations for corrective measures⁶².

The EGASPIN sets out a list of activities in the oil and gas sector that require environmental assessment. They include all seismic operations; oil and gas field developments onshore, near shore, offshore and deep shore; hydrocarbon processing facilities; construction of waste treatment facilities; and/or disposal facilities.

After project completion, regular environmental audits must also be carried out. The FME requires an environmental audit to be carried out every 2-3 years. The DPR also carries out regular environmental audits of oil and gas installations, stations, depots, etc.

8.6 Enforcement of Environmental Laws in Nigeria

Environmental regulators have wide ranging powers in the event of violation of environmental permits and environmental laws in general. The FEPA Act gives authorized officers of the FMEV powers to:

- i) Require to be produced, then examine and take copies of any license or permit, certificate or document required under the Act or regulations made hereunder;
- ii) Enter and search any land, building, vehicle, tent, vessel, floating craft or any inland water;

⁶¹ EIA Act of 1992.

⁶² Akwa Ibom State Environmental Protection and Waste Management Agency Act (EPWMA).

- iii) Cause to be arrested any person whom they have reason to believe has committed an offence against the Act or any regulations made hereunder; and
- iv) Seize any item or substance which they have reason to believe has been used in the commission of such offence or in respect of which the offence has been committed.

The LASEPA Law also contains similar provisions authorizing officers to search and seize offending items and to arrest offenders. Some examples of offences under the LASEPA Law include the discharge of raw untreated human waste into any public drain, gorge, or any land in the State, and the discharge of any form of oil, grease, spent oil including trade waste brought about in the course of manufacturing into any public drain, water-course, water gorge and road verge⁶³.

Similar provisions are contained in the Akwa Ibom State EPWMA Act⁶⁴. The EPWMA Act empowers inspectors to inspect premises and take samples of waste generated on premises. The EPWMA Act also provides that any person who commits an offence under the Act shall be arraigned before the Environmental Sanitation Court. This Court was established in pursuant to the EPWMA Act to try offending individuals or organizations. Offences under the EPWMA Act include burying or dumping expired drugs or chemicals without a permit, using gamalin 20 or any herbicide, insecticide or other chemicals to kill fishes or any other aquatic life in rivers, lakes and streams.

Section 11 of the Harmful Wastes Act empowers the Minister charged with responsibility for works and housing to seal up an area or site used or being used for the purpose of depositing or dumping harmful waste. Pursuant to section 37 of the Petroleum (Drilling and Production) Regulations 1969 (Drilling Regulations) the holder of an Oil Mining Lease (OML) or an Oil Prospecting License (OPL) is required to prevent the escape of petroleum into any water, well, spring, stream river, lake reservoir, estuary or harbour. The Drilling Regulations further authorizes inspectors to examine the premises of the holder of the OML or OPL to ensure that such persons comply with the Drilling Regulations. Any person who fails to comply with the provisions of the Drilling Regulations may be prosecuted in court.

⁶³ Lagos State Environmental Protection Agency Act.

⁶⁴ Akwa Ibom State Environmental Protection and Waste Management Agency Act.

The DPR also has powers to seal up premises, seize offending substances, impose fines and require the clean up of environmental damage. Violators risk fines and in certain cases, a shutdown of the polluting/offending facility until there is compliance.

8.7 Waste Management and Control in Nigeria

The relevant legislation defines "waste" and refers to categories of waste. The LASEPA Law defines waste to include "industrial, solid, liquid, gaseous gases containing substances such as sulphur dioxide, oxides or nitrogen, hydrogen-sulphide, carbon-monoxide, ammonia, chlorine, smoke and metallic dusts and particles, oil organic vapours, corrosive, reagent, flammable liquid solid, poison, poly-chloringhed biphenyl, dynocyanide, methyl-melamine, ethyl acetate, toxic substance, cement waste etc."

Under the Harmful Waste Act, "harmful waste" is defined "to mean any injurious, poisonous, toxic or waste-emitting radioactive substance if the waste is in such quantity, whether with any other consignment of the same or of different substance, as to subject any person to the risk of death, fatal injury or incurable impairment of physical and mental health; and the fact that the harmful waste is placed in a container shall not by itself be taken to exclude any risk which might be expected to arise from the harmful waste"⁶⁵.

Certain categories of waste involve additional duties and controls. Poisonous, toxic or radioactive waste is treated differently from household or industrial waste or effluents that are non-toxic in nature. Under the Nigerian Radioactive Waste Management Regulations 2006,⁶⁶ radioactive waste which does not qualify for discharge or release to the environment shall be disposed of in a near surface repository to be established by the government and licensed by the Nigerian Nuclear Regulatory Authority. In addition to this, radioactive waste must be categorized and kept in suitable containers with visible labels indicating the nature of waste generated the date of waste generation, the waste category and other relevant information. The more dangerous or hazardous the waste is, the higher the level of control needed for its storage, disposal and treatment.

The laws allow the storage or disposal of waste on site subject to the issuance of relevant permits. Regulation 10 of the National Environment Protection (Pollution Abatement in Industries and Facilities Generating Wastes) Regulations made pursuant to the FEPA Act

⁶⁵ Harmful Waste Act of Nigeria under the Nigerian Radioactive Waste Management Regulations 2006

⁶⁶ Nigerian Radioactive Waste Management Regulations 2006.

provides that no person shall engage in the storage, treatment or transportation of harmful toxic waste without a permit issued by FEPA. Where harmful toxic waste is produced on-site, it may only be stored or disposed on-site where a permit has been issued to the producer of such waste.

Where it is environmentally safe to so do, solid waste may be stored or disposed of on-site, subject to the issuance of the requisite permit - Regulation 16 of the National Environment Protection (Pollution Abatement in Industries and Facilities Generating Wastes) Regulations. Producers of waste may retain residual liability, particularly where a transferee or person engaged to dispose of the same absconds. If the regulator is able to trace the waste back to the producer, it would be liable for the clean up.

The FEPA Act provides that the collection, treatment, transportation and final disposal of waste shall be the responsibility of the industry or facility generating the waste.

Regulation 11 of the National Environment Protection (Pollution Abatement in Industries and Facilities Generating Wastes) Regulations provides that the collection, treatment, transportation and final disposal of waste shall be the responsibility of the industry or facility generating the waste. The ultimate responsibility lies with the producer, as under Nigerian law, the "polluter pays" principle applies.

8.7.1 Take-back and Recovery of Waste in Nigeria

The law places the responsibility for the take-back or recovery of waste on the waste producer. The Nigerian Radioactive Waste Management Regulations 2006 provides that the primary responsibility for the safe management of radioactive waste lies with the waste generator and the waste generator shall take all necessary actions to ensure the safety of radioactive waste unless the responsibility has been transferred to another person or organization approved by the Nigerian Nuclear Regulatory Authority. The Regulations further provide that the waste generator shall be responsible for collection, characterization and temporary storage of radioactive waste arising from his activities and discharge of exempt waste.

EGASPIN provides that as much as possible, all the reusable components of hazardous wastes should be recovered by using the best practicable technology currently available. The National Environmental Protection (Management of Solid and Hazardous Wastes) Regulations made pursuant to the FEPA Act provide that waste should be recovered at the point of generation, where practicable.

8.8 Environmental Liabilities

The FEPA Act provides that a person who breaches the provisions of the Act commits an offence and shall on conviction be liable to a fine, or imprisonment, or both. The FEPA Act also provides that where there has been a discharge of any hazardous substance in violation of environmental laws/permits, the person responsible for the discharge will bear the liability of the costs of removal and clean up.

The Harmful Wastes Act provides that any person found guilty of purchasing, selling, importing, transporting, depositing or storing harmful waste shall on conviction be sentenced to imprisonment for life. A typical defense is that the act (e.g. discharge of hazardous substance into the air, or upon the land and the waters of Nigeria or at the shorelines) was done within the permissible limit or was authorized under any law in force in Nigeria.

Another defense under the law is that the breach of the environmental law or any permit given hereunder was caused solely by a natural disaster or an act of war or sabotage and as such, the owner or occupier of the facility would seek to avoid liability on this ground. Ignorance of a breach of environmental law is typically not a defense to an environmental offence. Section 25(9) of the Environmental Pollution Control Law of Lagos State provides that it shall not be a defense for the owner of any land on which waste is buried or dumped to state that the offence was committed without his knowledge⁶⁷.

An operator would typically not be liable for a polluting activity which is within the limits of any environmental permit granted to it, provided that such activity is strictly in compliance with the terms and conditions of the relevant permit. The EPWMA Act provides that no person is allowed to discharge into any public drain, water course, or roads verge any form of oil, grease, spent oil brought about in the course of manufacturing or other type of business without the written permission of the Agency. The operator will be liable for any discharge outside the limit of the permit which is renewable annually.

Directors and officers may in certain circumstances attract personal liability for environmental wrongdoing. Under the FEPA Act, directors and officers of a company

⁶⁷ Environmental Pollution Control Law of Lagos State of Nigeria.

who were in charge of or responsible to the company for the conduct of the business of the company at the time the environmental wrongdoing was committed shall be deemed to be guilty of an offence and shall be liable to be prosecuted and punished, usually by payment of a fine or imprisonment.

The EPWMA Act specifically provides that where an offence is committed with the consent or connivance of or attributed to any neglect or omission on the part of the director, manager, secretary or other similar officer of the company such person shall be liable on conviction to a maximum of five years imprisonment without an option of a fine.

The only defense open to such directors and officers is that the offence was committed without their knowledge or that they exercised all due diligence to prevent the commission of such offence. Directors and officers are typically able to obtain the necessary indemnifications from the company with regard to liabilities arising in the course of business, including environmental pollution. It is also possible for companies to take out insurances protecting their officers, employees and directors from potential personal liability arising in the course of operations.

Under the provisions of the Companies and Allied Matters Act of 1990 (CAMA)⁶⁸, an officer may be indemnified in respect of anything done or omitted to be done in the course of the company's operations, if there is a subsisting provision (whether contained in the articles of the company or in any contract with the company) to this effect.

8.9 Implications from Environmental Liability Perspectives

There are different implications from an environmental liability perspective of a share sale on the one hand and an asset purchase on the other. A shareholder of a company would typically not be personally liable for environmental damage or other liabilities of a company, under the principle of limited liability. A shareholder is liable to the extent of his shareholding in the company, unless he is proved to have been aware of the environmental breach and is involved in the offending acts (Adewale, 1997). Thus, a shareholder who has purchased shares in a company that may have environmental liabilities arising from its operations would not be personally liable for any environmental

⁶⁸ Companies and Allied Matters Act of 1990 (CAMA)

damage arising from the company's operations. Nigerian law places liability on the directors and officers of a company for environmental damage created by the company. The definition of officers of a company under CAMA does not include shareholders of the company.

An asset purchase, on the other hand, makes the purchaser an owner who may be held liable for any environmental liability (Adewale, 1997). Under Nigerian law, environmental liability is based on the owner/occupier principle. Thus, the owner/occupier of premises where a polluting activity takes place is liable for the damage and will have the responsibility of cleaning up such pollution as well as paying any fines imposed. Such owner/occupier can only avoid liability if he is able to prove that the polluting activity took place prior to the asset purchase, in which case the actual producer of the waste will be liable, if he can be located. Lenders are typically not liable for environmental wrongdoing and/or remediation costs as they usually insert appropriate protective provisions in the relevant financing documents.

Lenders may become liable for environmental wrongdoing and/or remediation costs where such lenders have exercised any step-in rights pursuant to the financing documents, and when they are in effective occupation of the polluting facility. Such lenders may be held liable for any environmental wrongdoing and/or remediation costs under the principle of occupier's/owner's liability. We are not aware of any instance where a lender is liable for environmental wrongdoing and/or remediation costs.

8.9.1 Contaminated Land, Soil and Groundwater Issues in Nigeria

The approach to contamination of soil or groundwater is that the polluter pays the costs of clean up and may also be liable to fines or imprisonment. The person responsible for the contamination will be required to restore the soil and groundwater to appropriate safety levels.

The FEPA Act provides that any person who discharges hazardous substances into the air, upon the land or waters of Nigeria shall upon conviction be subject to a fine and/or imprisonment for a term not exceeding 10 years (FEPA, 1992). If this offence is committed by a company, the company shall on conviction be liable to a fine. The FEPA Act also provides that unless the owner or operator of any vessel or onshore or offshore facility from which the hazardous substance is discharged can show that the discharge

was caused by a natural disaster or an act of war or sabotage, the owner or occupier shall be subject to the cost of removal and restoration or compensation as the case may be.

The Akwa Ibom EPWMA Act provides that any person who allows toxic waste to be dumped in any land or water commits an offence and shall be liable on conviction to a maximum term of five years imprisonment. EGASPIN provides as follows: The Licensee/Lessee who is responsible for the generation of the waste shall be liable for any contamination associated with such waste. Such Licensee/Lessee shall bear all the costs associated with the investigation, remediation and monitoring, even when the same are conducted at the discretion of the Director, Petroleum Resources. Adequate compensation shall be paid appropriately by such Licensee/Lessee to the relevant community and landowners, in consultation with the local government(s) and the Director, Petroleum Resources.

Under the Harmful Waste Act, where any damage (e.g. contamination of land or groundwater) is due to harmful waste, any person who deposited, dumped or imported the harmful waste or caused the harmful waste to be so deposited, dumped or imported shall be liable for the damage. Under the Harmful Waste Act, each of the persons responsible shall be deemed to have committed a crime. The liability of each such offender is several. Regulators may require additional steps to be taken with regard to an agreed program of environmental remediation i.e. pursuant to an environmental audit and it is subsequently determined that additional action is required.

Third parties may also challenge an agreed program of environmental remediation. Such interested third parties may file claims in the Court challenging any arrangements they perceive to be inadequate to restore the contaminated land.

Nigerian law does not impose a general obligation to investigate land for contamination or any person saves for the statutory obligations of the relevant regulators. Such an obligation however arises for a project which meets the requirements of environmental laws and requires an EIA. For such a project to be undertaken, the EIA report must cover results of land/soil investigations on the suitability of the site for the proposed project and examine the determined potential impact of the project. Upon discovery of contamination and reporting of the same, the EIA Report would typically provide an action plan for mitigating the effects of the potential contamination.

8.9.2 Payment for Environmental Damage and Powers of Regulators

Under the law, the government has the authority to obtain monetary damages from a polluter for aesthetic harm to public assets. The FEPA Act requires a polluter to pay for the costs of removal of any such pollution, including any costs which may be incurred by any government body or agency in the restoration or replacement of damaged or destroyed natural resources.

The EPWMA Act requires a polluter to pay compensation to affected persons and the State for environmental damage caused by the offender. Nigerian environmental regulators have statutory powers to require the production of documents, take samples, conduct site inspection etc. in the course of carrying out their functions of preventing or investigating environmental damage.

The FEPA Act empowers the FMEV to require the production for examination of any license or permit granted to any person, to enter and search any land or building to take samples, conduct site inspections, interview employees and to arrest any offender. Under the Akwa Ibom EPWMA Act, Environmental Protection and Waste Management Inspectors are empowered to inspect environmental standards on premises during reasonable hours between 6:00 am and 6:00 pm. similar provisions are contained in the LASEPA law.

8.9.3 Reporting / Disclosure of Pollution Obligations in Nigeria

The law generally obligates anyone who discovers pollution on any site to report the same to the authorities. Where pollution is found on a site or is discovered to be migrating off-site, there is a legal obligation to disclose this to an environmental regulator and to potentially affected third parties. Section 22(2) (a) of the FEPA Act provides that where there has been a discharge into the environment, the responsible party shall immediately give notice of the discharge to the FME and to any other relevant agencies.

The rule in *Rylands v. Fletcher* imposes liability for any damage that may be caused by pollution that has migrated to the site of a third party. The rule in *Rylands v. Fletcher* requires that the person who for his own purposes brings on his lands and collects and keeps there anything likely to cause damage if it escapes, must keep it at his peril, and if he does not do so, is prima facie answerable for all the damage which is the natural consequence of its escape to the third party's property?.

8.9.4 Pursuing Environmental Claims in Nigeria

We confirm that Nigerian law recognizes class action by a group or a community of people for pursuing environmental claims. Such actions are fairly common in the oil and gas industry where communities claim damages and clean up for pollution of their lands, waters and general environment. In a recent case which involved Shell Petroleum Development Company the inhabitants of the community close to a major oil spillage filed a group action against Shell seeking damages of up to Sixty Million Naira (N60,000,000.00). The community won in the lower courts and the appellate court upheld the decision but reduced the damages awarded.

Nigerian courts have awarded special and general damages in actions for damages arising from environmental pollution. Such damages have been for the loss of fishing rights, pollution of drinking water, damage and hazards from pollution of the environment, general inconvenience, and miscellaneous losses. The courts typically do not award exemplary damages in the claims brought before them. Exemplary damages may be awarded only in the following three circumstances:

- where the plaintiff has suffered oppressive, arbitrary or unconstitutional action by a servant of the government;
- where the defendant's conduct has been calculated by him to make a profit for himself which may well exceed the compensation payable to the plaintiff; and
- Where statute so provides.

8.10 Environmental Compliance Monitoring in Nigeria

Nigeria participated actively in the United Nations Conference on the Environment and Development (UNCED) from its inception in 1989 to conclusion of the Earth Summit in Rio'de Janerio in 1992. The UNCED preparatory activities and UNCED itself assisted the country in refocusing its environment protection efforts. Agenda 21, which is a program of actions for global sustainable development, is one of the most significant outcomes of UNCED 1992.

Many countries including Nigeria are taking action to protect public health from environmental pollution and to restore and protect the quality of their natural environment as contained in the Agenda 21. Nigeria has developed management strategies to prevent or control pollution which involve legal requirement i.e. standards,

permits, regulations that must be met by individuals and facilities that cause or may cause pollution. These requirements are an essential foundation for environmental and public health protection but they are only the first step.

The second essential step is compliance – getting the groups that are regulated to fully implement the requirements and third step is monitoring – ensuring the regulated group stay within the required level, and last step is enforcement – set of actions that are taken to achieve compliance within the regulated community and correct or halt situations that endanger the environment or public health. Enforcement includes inspection, negotiation, legal action and compliance promotion.

Compliance is a process of implementing fully the environmental requirements. Compliance occurred when requirements are met and desired changes are achieved e.g. changing of processes, raw materials, work practices or that hazardous waste is disposed at approved sites, using appropriate technologies. The success of an environmental management depends on the requirements' design. A well-designed requirement will result in good compliance while poorly designed requirement will result in difficult compliance.

8.10.1 Benefits of Compliance Strategy

When compliance strategy is very effective many benefits are accrued. These benefits include:

- i) improved environmental quality and public health;
- ii) reinforced credibility of environmental protection efforts;
- iii) ensured fairness for those who willingly comply; and
- iv) brings economic benefits to individual and to society.

The overall benefit of the compliance strategy would be to ensure environmental sustainability of the nation.

8.11 The Benefits of Environmental Compliance Strategy in Nigeria

The benefits of environmental compliance strategy in Nigeria as contained in FEPA (1994) are the following:

i) Protection of Environmental quality and Public Health. Compliance is essential to achieving the goals of protecting public health and environmental quality envisioned by

environmental laws. Public health and the environment will be protected only if environmental requirements get results. Compliance programs are essential to get these results.

ii) Building and strengthening the credibility of Environmental requirements. To get results, environmental requirements and the government agencies that implement them must be taken seriously. Compliance is essential to build credibility for environmental requirements and institutions. Once credibility is established, continued enforcement is essential to maintain credibility. Credibility means that society perceives its environmental requirements and the institutions that implement them as strong and effective. Credibility encourages compliance by facilities that would be unlikely to comply if environmental requirements and institutions are perceived as weak. The likelihood that other law, the greater the likelihood of compliance, and the likelihood that other government efforts to protect the environment will be taken seriously.

iii) Ensuring fairness. Without compliance, facilities that violate environmental requirements will benefit compared to facilities that voluntarily choose to comply. A consistent and effective compliance program helps ensure that companies affected by environmental requirements are treated fairly. Facilities will be more likely to comply if they perceive that they will not be economically disadvantaged by doing so.

iv) Reduction of costs and liability. Though compliance is often costly in the short-term, it can have significant long-term economic benefits to both society and the complying facility. The healthier environment created by compliance reduces public health and medical costs, as well as the long-term cost to society of cleaning up the environment. Compliance benefits industry by reducing its liability and long-term cleanup costs. Industry may also realize immediate economic benefits of compliance involve recycling valuable materials or increasing the efficiency of its processes. A strong compliance program may waste, rather than installing expensive pollution control and monitoring equipment.

8.11.1. Goals of Compliance and Compliance Strategy

There are many goals why compliance programs are put in place. The main goal is to change human behaviour so that environmental requirements i.e. standards, regulations and policies are complied with. Also other goals include correction of any immediate or serious threats to public health or environment posed by pollution. In order to achieve

the goals of compliance, the regulated community must be motivated to comply, barriers that prevent compliance must be removed and existing factors that encourage non-compliance must be overcome.

Many factors listed in Table 18 below affect compliance and vary in a particular situation depending on the economic state of a nation, laws/requirements, technical and financial limitations, expectations of restive populace, cultural norms, and environmental situation of the native and values of the people. In order to evolve effective compliance strategies, the following must be recognized and considered:

- Status Quo Ante (Laws and industrial estate infrastructure)
- Economic State of the Nation
- Technical and Financial Limitation
- Expectations of the restive populace
- Cross Sectorial nature of environmental issues

Governmental Structures, Constitution (and Laws)

E.g. Strong versus weak central statutory responsibilities of tiers of government.

Ministries of Government and their laws e.g. Industry and Commerce.

Response mechanisms in compliance

- Informal Versus Formal
- Civil Response (administrative or judicial)
- Criminal Response (fines or imprisonment)
- Administrative response (regulatory agency in control) Negotiations and Settlement
- Judicial Response (courts etc)

Economic and fiscal instruments

- Discharge Fee
- Pollution taxes
- Tax incentives/Accelerated Depreciation Subsidies
- Subsidies.
- Facility Operation bonuses
- Penalties, fines, etc

Table 18: Factors Affecting Compliance (FEPA, 1992)

Factors Motivating Compliance	Barriers to Compliance and Factors Encouraging Non-Compliance
ECONOMIC - Desire to avoid a penalty - Desire to avoid liability - Desire to save money by using more cost-efficient and environmentally sound practices.	- Lack of funds - Greed/desire to achieve competitive advantage -Competing demand for resources
SOCIAL/MORAL - Moral and social values for environmental quality - Societal respect for the law - Clear government will to enforce environmental laws	- Lack of social respect for the law - Lack of public support for environmental concerns -Lack of government willingness to enforce
PERSONAL - Positive personal relationship between program personnel and facility managers - Desire, on the part of the facility manager, to avoid legal process - Desire to avoid jail, the stigma of compliance, and adverse publicity	- Fear of change - Inertia - Ignorance about requirements -Ignorance about how to meet requirements
MANAGEMENT - Jobs and training dedicated to compliance - Bonuses or salary increase based on environmental compliance	-Lack of internal accountability for compliance -Lack of management systems for compliance -Lack of compliance training for personnel
TECHNOLOGICAL * Availability of affordable technologies	-Inability to meet requirement due to lack of appropriate technology. -Technologies that is unreliable or difficult to operate.

Elements of Compliance and Enforcement Program

- Establish Enforcement Requirements
- Identify the regulated community

- Introduce Permitting Requirement
- Enlighten and Promote Compliance
- Conduct Inspections and Monitor Compliance
- Establish Management accountability for facilities by stressing the need for regular reports.
- Provide prompt enforcement response to violators
- Evaluate the Results to determine success

Establish and maintain credibility on each of the elements for enforcement to be sustainable.

8.11.2. Enforcement and Compliance Activities in Nigeria

The Nigerian government through the Federal Environmental Protection Agency (FEPA) (now Federal Ministry of Environment) Decree 58 of 1988 and subsequent amendment Decree 59 of 1992 established instruments of intervention to halt environmental degradation in form of policy, standards, guidelines and regulations with the overall strategy of ensuring environmental sustainability of the country. These instruments of interventions include:

(i) National Policy on the Environment established in November, 1999.

This document describes guidelines and strategies for achieving the policy goal of sustainable development by:

- Securing for all Nigerians a quality of environment adequate for their health and well-being.
- Conserving and using the natural resources for the benefit of present and future generations;
- Restoring maintaining and enhancing the ecosystem and ecological processes essential for the preservation of biological diversity;
- Raising public awareness and promoting understanding of the essential linkages between environment and development and;
- Cooperating with other countries and international organizations and agencies to achieve the above.

(ii) National Guidelines and Standards for Environmental Pollution Control in Nigeria (March, 1991). The basic instruments for monitoring and controlling industrial and urban pollution include:

- National Effluent Limitation Regulation S.I.8 of 199. This makes it mandatory for industrial facilities to install anti-pollution equipment, makes provision for effluent treatment and prescribes maximum limits for effluent parameters allowed for contravention.
- Pollution Abatement in Industries and Facilities Generating Waste Regulations S.I.9 of 1991. Among other things, this imposes restrictions on the release of toxic substances and stipulates requirements for monitoring of pollution to ensure that permissible limits are not exceeded while unusual and accidental discharges contingency plans, generator's liability and strategies for waste reduction and the safety of workers are put in place.
- Waste Management Regulations S.I.15 of 1991. This regulates the collection, treatment and disposal of solid and hazardous wastes from municipal and industrial sources and gives the comprehensive list of chemicals and chemical wastes by toxicity categories.
- Environmental Impact Assessment (EIA) Decree N. 86 of 1992. This law makes EIA mandatory for any major development project likely to have adverse impacts on the environment and prescribes the procedure for conducting and reporting EIAs.
- Sectoral Guidelines for EIA. This prescribes the detailed guidelines for conducting EIA for projects on sectoral basis.
- Natural Resources Conservation Action Plan. This spells out sectoral strategies for the conservation of Nigeria's natural resources (fauna, flora, soil and aquatic ecosystems) towards sustainable development.
- National Fuel wood Substitution Program. This program is aimed at reducing the indiscriminate felling of trees for fuel wood by prescribing appropriate strategies for the development and utilization of alternative sources of energy.
- National guidelines on waste disposal through underground injection 1999.
- National guidelines in spilled oil finger printing 1999
- National guidelines on registration of environment friendly products 1999
- National guidelines and standards for water quality in Nigeria 1999.
- National guidelines on Environmental Audit 1999.
- National guidelines on Environmental Management Systems 1999

Also Nigeria signed and ratified some international convention and protocols. Some of the convention and protocols include:

- 1993** Regarding Navigation and Economic Cooperation between the States and of the Lake Chad Basin
- 1964** Agreement on the River Niger Commission on Navigation and Transport
- 1964** Convention on the Development of the Lake Chad Basin
- 1986** African Convention on the Conservation of Nature and Natural Resources
- 1971** International Convention on the Establishment of an International Fund for Compensation for Oil Pollution Damage
- 1972** Convention on the Protection of the World Cultural and Natural Heritage
- 1972** Convention on the Prevention of Marine Pollution by the Dumping of Wastes
- 1973** Convention of International Trade in Endangered Species.
- 1973** Convention on the Conservation of Migratory Species of Wild Animals.
- 1981** Convention for Cooperation in the Protection and Development of the Marine and Coastal Environment of the West and Central African Region.
- 1982** Convention on the Law of the Sea
- 1985** Vienna Convention for the Protection of the Ozone Layer
- 1987** Montreal Protocol on Substances That Deplete the Ozone
- 1989** Basel Convention on the Transboundary Movement of Hazardous Waste and Their Disposal
- 1992** Framework Convention on Climate Change
- 1992** Convention on Biological Diversity
- 1994** Convention on Desertification
- 2000** Rotterdam Convention (Prior Informed Consent – PIC)

With the initiation of these instruments, enforcement by FEPA (now Federal Ministry of Environment) became the most effective tool to bring regulated community into compliance through compliance promotion, and for cases of non-compliance administrative sanctions are applied.

The strategies evolved by FEPA (now Federal Ministry of Environment) have been effective in settling most enforcement cases in Nigeria because judicial law-suits are far more expensive, require more staff time, and may take several years to complete and at the end, environmental damage may still not be abated. Despite the good work being

done by the Ministry of Environment, more effort needs to be made on the part of this new Ministry to ensure environmental sustainability of Nigeria.

8.12. Assessing Nigeria's Progress on Agenda 21 Since Rio as Regards Compliance/Monitoring/Environmental Standards

The Federal Environmental Protection Agency (now Federal Ministry of Environment) was created under Decree 58 of 1988 with the sole responsibility of protecting and regulating the Nigerian environment. The perceived enormous powers of the then Agency created a lot of frictions with industries wanting to do business as usual and also with the traditional ministries reluctant to release the environmental compliance and enforcement part of their functions which they used to perform. There seem to be many ambiguities in the laws of the competing ministries and the non-deletion of aspects of the old ministry's laws now transferred to the new ministry. There are certain critical issues which have been affecting compliance and enforcement activities, which at the same time hamper the effective functioning of the responsible agencies. These include:

- Inter-ministry, agency conflicts
- Inadequate legal instruments
- Infrastructure
- Ministry – industry relations
- Economic incentives
- Leadership crisis
- Loss of staff to other sectors
- Pressure groups and environmental politics

Inter-ministry, Agency conflicts and Legal Instruments

Conflicts and rivalry among the ministries are most disturbing in Nigeria. Also, this conflict exists between the federal and the state government ministries/agencies carrying out compliance and enforcement activities e.g. Federal Ministry of Environment, Department of Petroleum Resources of Federal Ministry of Petroleum Resources and States Ministry of Environment, Federal Ministry of Environment and National Agency for Food and Drug Administration (NAFDAC), Federal Ministry of Environment and Nigerian Maritime Organization etc. These conflicts weaken enforcement and compliance and lead to lapses in environmental requirement implementation and thus continuous degradation of the environment.

Many of the legal instruments in Nigeria were enacted following an aftermath of environmental pollution or disasters or during military rule. These laws/regulations contain lots of stiff penalties or serious loopholes making compliance and enforcement difficult e.g. the Harmful Waste (Criminal Provisions Act) promulgated following the experience of toxic waste dumped in Koko village Nigeria in 1987, prescribing a sweeping ban on all wastes without regards to green wastes such as recyclable used plastics and fibers both which are in high demand in the country's plastics and blanket industries.

Infrastructure

For effective compliance and enforcement program, the implementing agencies require office building, residential quarters for staff and laboratories and central waste management infrastructures such as sanitary and hazardous landfills, treatment facilities for the regulated community.

Government Agencies and Industry relations

Most industries in Nigeria are usually slow to commit extra investment on pollution abatement not until offenders are threatened with sanctions. Some industries even try to mount pressure on government and blackmail the implementing agencies. However, some industries cooperate with the government agencies.

Economic Instruments

With the increase in external debt of Nigeria and downturn of the economy, the industries and regulated community have been facing hard times. The absence of economic incentives and access to soft loans make it difficult for investment in pollution abatement. Also low morals of staff of the regulating agencies, caused by low wages and remunerations also hinder environmental compliance.

Leadership crises and frequent changes in Policies

Stable leadership of implementing environmental organization is compulsory requirement of an effective compliance and enforcement program. However, such leadership must be well-informed on environmental issues.

Loss of Staff to other Sectors

Many of the staff trained in the Federal and State Environmental Protection Agencies have moved to other sectors due to frequent changes or due to poor remuneration.

Pressure groups and Environmental Politics

Increasing global awareness of environmental issues has both negative and positive impacts especially in political volatile states e.g. oil pollution issues in the Niger Delta. Such awareness engenders consciousness and promote environmental protection ethics, an uneasy situation arises when such consciousness become a tool of political struggles or aspirations.

Chapter Nine

Recommendations and Conclusion

This final chapter will proffer recommendations to the governments and other authorities that have stake in the Niger Delta region, on how best to achieve environmental sustainability in the region. The recommendations in this work are those that are achievable by governments and other stakeholders in the region, and should therefore be implemented judiciously for the sustainable development of the region and Nigeria in general.

9. 0. Introduction

The environmental degradation caused by oil exploration and exploitation in the Niger Delta region of Nigeria has been a serious concern to the people of the region. This problem has had a magnifying effect on their local economy (their farming and fishing activities), and therefore threatens their existence as a people. To prevent further deterioration of the Niger Delta environment, and ensure its environmental sustainability, the collaborative efforts of all the stakeholders are absolutely mandatory. This calls for urgent need on the part of government, the oil companies, the Niger Delta people, international donor agencies, NGOs and other interest groups to have a clear understanding of the situation at hand, and then come out with implementable plans and programs to solve the problems in the region. It is not acceptable for the environmental degradation that has affected the region over the years to continue unabated, and for the pervasive poverty in the area to continue without the necessary interventions of the governments, the oil companies and the international donor agencies. The problem in the Niger Delta region should be given the attention it deserves.

9.1. Summary of the Constraints to Environmental Sustainability in the Niger Delta Region

The summary of environmental problems and their attendant consequences in the Niger Delta and Nigeria in general include the following:

- Degradation of farmlands and water bodies by oil spills and gas flaring, thereby hampering crop and fish yield;
- Endemic and pervasive poverty caused by negligence on the part of governments and the oil companies;

- Lack of essential infrastructural facilities/social services that support healthy living;
- Lack of effective monitoring of environmental laws and regulations by responsible authorities due to inexperience on the part of staff, corruption or absence of enabling environment;
- Lack of political will on the part of government;
- Over-dependence on fossil fuel by Nigerian government, and negligence of renewable energy alternatives in the energy mix of the country;
- Rapidly deteriorating ecological and economic conditions;
- Endemic instability over resource rights;
- Social tensions not adequately addressed by existing policies and attitudes;
- Region characterised by its parlous state in the midst of abundant living and hydrocarbon resources;
- Paucity and unreliability of data;
- Consequent absence of credible basis for addressing problems; and
- Diverse and conflicting stakeholder views on problems and possible solutions.

Bearing in mind the above problems, this research makes the following recommendations to the policy makers for effective handling and abatement of the environmental woes of the Niger Delta region, and to achieve environmental sustainability in Nigeria:

9.2 Overhaul of the Policy and Regulatory Framework Addressing Environmental Pollution in Nigeria

The enactment and implementation of the Environmental Impact Assessment legislation is a salutary development in its quest for sustainable development, the shortcomings of the decree notwithstanding. Experience with EIA in Nigeria so far has shown that the legislation needs to be fine-tuned for more positive results. Areas of concern include public participation and broadening the scope of the law to encompass policies and programs and the role of proponents. Such a review could possibly wait for some years ahead to enable the Federal Ministry of Environment (FMEV) and researchers collect adequate information on those areas that should be amended.

For effective compliance/monitoring and environmental standards, critical issues such as funding, legal instruments, trained manpower, conflicts, economic incentives must be addressed and strengthened adequately. Viable strategies must continue to be evolved to

overcome these challenges. However, flexibility to review and revise environmental management program designs is a key to long-term effective environmental compliance and monitoring.

There is need for international organisations such as UNDP, UNEP, World Bank and other international NGOs to take a lead in sustaining environmental education and protection efforts in Nigeria by contributing in the areas of capacity building, institutional strengthening, and review of legal instruments and execution of programs under the Nigerian local Agenda 21 Action Plan.

9.3. Development of an Integrated Environmental Action Plan (IEAP) for the Niger Delta Region

Government institutions as well as other stakeholders in the Niger Delta region have recognized that environmental degradation is taking an increasing toll on human health and economic productivity. This recognition needs to be translated into action by developing and implementing an Action Plan that addresses the priority environmental issues at hand. Critical decisions need to be taken now to develop an integrated strategy that makes the most effective use of the limited resources in the Niger Delta for the improvement of environmental conditions in the region.

This study therefore recommends an integrated resource management approach, such as the Integrated Coastal Zone Management (ICZM) model, a concept borne in 1992 during the Earth Summit at Rio de Janeiro, which has been used effectively in some developed countries. The policy regarding ICZM is set out in the proceedings of the summit within Agenda 21, Chapter 17. The concept of ICZM is necessary to address the broad range of environmental and social issues facing the Niger Delta region of Nigeria.

The European Commission defines the ICZM as “a dynamic, multidisciplinary and interactive process to promote sustainable management of coastal zones”. It covers the full cycle of information collection, planning (in its broadest sense), decision making, management and monitoring of implementation. ICZM uses the informed participation and cooperation of all stakeholders to assess the societal goals in a given coastal area, and to take actions towards meeting these objectives. ICZM seeks, over the long-term, to balance environmental, economic, social, cultural and recreational objectives, all within the limits set by natural dynamics. 'Integrated' in ICZM refers to the integration of

objectives and also to the integration of the many instruments needed to meet these objectives. It means integration of all relevant policy areas, sectors, and levels of administration. It means integration of the terrestrial and marine components of the target territory, in both time and space.⁶⁹

Generally accepted ICZM principles, which have formed the conceptual basis for successful programs throughout the world, include:

Addressing the priority issues with interventions that have the highest net marginal benefits;

- i) Developing an appropriate incentive based regulatory framework;
- ii) Strengthening sectoral management and induce sectoral institutions to recognize and account for the interconnections between coastal resources and uses;
- iii) Creating institutional arrangements and linkages to coordinate sectoral activities and policies such that they reinforce the goals agreed on for the coastal zone;
- iv) Focusing on proactive environmental planning, impact assessment, and management;
- v) Minimizing foreclosure of future development options by current activities (maintain flexibility for future resource uses);
- vi) Following the 'polluter pays' principle, whereby firms are required to pay all-or at least a substantial part-of the social costs of their activities;
- vii) Integrating stakeholder participation and ownership throughout the ICZM process;
- viii) Establishing open and effective institutions; and
- ix) Striving to have prices reflect the full cost of goods and services.

This study strongly believes that if the Nigerian government and the multinational companies operating in the Niger Delta region team up and embrace the ICZM concept, the conflicts and bickering in the region would be a thing of the past. This will usher in the much expected sustainable development dividends in the region.

⁶⁹ Integrated coastal zone management (ICZM) as defined by The European Commission, retrieved from Wikipedia, the free encyclopedia 21 February 2008.

9.4. Commitment to Policy Reforms

To achieve sustainable development in the Niger Delta region, an Environmental Action Plan needs to be developed. It should be based on an appropriate policy framework to deal with the most critical policy failures, which include:

- Lack of recognition and enforcement of property rights;
- Economic policies which fail to encourage markets to reflect the full social and environmental costs of goods and services; and
- Lack of accountability and participation.

The main purpose of developing an environmental action plan is to provide clear incentives for all stakeholders to work towards sustainable development in the Niger Delta region. On the governmental level, reform requires that agencies consider their impact on environmental and equity concerns as part of an expanded mandate. At the individual and company level, regulatory reforms need to ensure that externalities become incorporated into private decision-making, also corporate social responsibility (CSR) should be incorporated into the day to day running of business by the multinational oil companies. For communities, reform needs to give them greater incentives and skills to manage resources more sustainably, and change their ways of thinking and make peace with the multinational oil companies operating in their communities.

Policies need to be directed towards the following objectives and action taken to implement them:

- i) reducing negative environmental and social impacts by emphasizing incentive mechanism;
- ii) alleviating poverty in order to reduce poverty induced environmental degradation;
- iii) encouraging investment in renewable resources;
- iv) increasing resource ownership and management by those affected by degradation;
- v) encouraging a precautionary approach to activities where information is poor or impacts are uncertain; and
- vi) increasing the accountability of decision-makers and expanding stakeholder participation in decision-making processes.

The federal and state governments should as a matter of urgent importance invest more in capacity building, and routine training of the staff of the Ministries of Environment and related agencies. This would enable them to get updated and be well equipped for the challenges ahead of them.

9.5. Solutions to the Infrastructural Decay in the Niger Delta Region

The Federal, State and Local Governments, and the Oil Companies should as a matter of urgency provide the basic amenities to the rural populace of the region. Concerted efforts should be made by the stakeholders in the region to ensure its sustainable development. However, the Oil Companies have shown some commitment in this direction, but they should put in more efforts to improving the living conditions of their host communities.

The Federal and State Governments should make use of the necessary government Ministries and Agencies and provide suitable housing facilities, healthcare, sanitation, transportation and portable water to the goose that laid the golden eggs “The Niger Delta Communities”. Activities geared toward this direction would forestall further escalation of youth restiveness and hostage taking in the region. An agency like the Niger Delta Development Commission (NDDC) established for the purpose of cleaning up and developing the Niger Delta region should be appropriately funded by government to be able to achieve the desired results.

9.6. Solutions to Poverty Challenges in the Niger Delta

For the endemic poverty in the Niger Delta to be eradicated appreciably, an appropriate poverty strategy by the Nigerian Government should include:

- Provide all persons with the opportunity to earn a sustainable livelihood;
- Implement policies and strategies that promote adequate and sustainable levels of funding, and focus on integrated human development policies, including income generation, increased local control of resources, local institution strengthening and capacity-building, and greater involvement of non-governmental organizations and local levels of government as delivery mechanisms;
- Develop all poverty-stricken areas through integrated strategies and programs of sound and sustainable management of the environment, resource mobilization, poverty eradication and alleviation, employment and income generation;

- Create a focus in National development plans and budgets on investment in human capital, with special policies and programs directed at rural areas, the urban poor, women, and children;
- Establish appropriate infrastructure and support system to facilitate the alleviation of poverty by implementing projects, programs, enterprises, and life styles sustainable at the grass roots level; and
- Sincere implementation of the National Economic Empowerment and Development Strategy (NEEDS).

9.7. Incorporation of Environmental Management Systems (EMS) in Oil Industry Operations in the Niger Delta Region.

EMS is defined as an industrial tool that enables an organization to systematically control its level of environmental performance, and helps management to identify potential environmental impacts arising from its activities, set appropriate environmental objectives, establish programmes to achieve corporate environmental goals and review activities to ensure that corporate environmental objectives are being properly carried out (Bergeron, 1997). Unlike the conventional stand-alone environmental auditing and review processes, which tend only to assess the environmental situation of an enterprise at the time at which they are carried out, an EMS ensures that an organization's environmental targets and objectives are being effectively pursued. Infact, an EMS links audits, reviews and other important environmental management processes through a network of management actions, procedures, documentations and records, and is designed with the purpose of promoting continuous environmental improvement (Hilson and Nayee, 2002).

The natural environment of the Niger Delta has been affected tremendously by the industrial activities going on there. Today the new industrial mentality tends towards pollution prevention, the minimization of environmental impacts, the disposal of generated waste products, the optimization of consumption and the use of clean technologies (Hanna and Newman, 1995; Porter and Van der Linde, 1995; Getzner, 1995).

Indeed, no research has hitherto been undertaken to determine EMS initiatives of the multinational oil companies operating in the coastal region of Nigeria (the Niger Delta). EMS, especially the International Organization for Standardization (ISO) – ISO 14001

EMS has been a tool for industrial sustainability in developed countries. As a result, most studies on EMS are confined to developed countries. Because of the lack of empirical studies in the context of most developing countries including Nigeria, little or nothing is known about EMS practice at the corporate level.

It is therefore the recommendation of this study that Environmental Management System (EMS) be incorporated by the oil companies in their activities in the Niger Delta region. This tool is extremely fundamental and worthy of corporate social responsibility (CSR) and environmental management, and would eventually help to achieve environmental sustainability in the Niger Delta region.

9.8. Introduction of Renewable Energy Alternatives into Nigeria's Energy Mix

The government should invest largely in renewable energy technologies which has less impact on the environment than the fossil fuel technology. Investment in this direction would help to shift attention from the much dominated fossil fuel use in Nigeria, and ultimately add to the energy mix of the country. This sector will also provide job opportunities thereby reducing the poverty level as well. As the country already has renewable energy policies in place, it is imperative that these policies should be put into use so as to save the Nigerian environment from further deterioration from oil exploration. The various renewable energy sources available in Nigeria are given below:

Hydro

Essentially, hydropower systems rely on the potential energy difference between the levels of water in reservoirs, dams or lakes and their discharges tail water levels downstream (Sambo, 2005). The water turbines which convert the potential energy of water to shaft rotation are coupled to suitable generators. The hydropower potential of Nigeria is very high and hydropower currently accounts for about 29% of the total electrical power supply (Sambo, 2005).

The first hydropower supply station in Nigeria is at Kainji on the river Niger where the installed capacity is 836MW with provisions for expansion to 1156MW. A second hydropower station on the Niger is at Jebba with an installed capacity of 540MW. According to Aliyu and Elegba (1990), an estimate for rivers Kaduna, Benue and Cross River (at Shiroro, Makurdi and Ikom, respectively) indicates their total capacity to stand at about 4,650MW. Then for the rivers of Mambila Plateau, the estimates are put at

2,330MW. Therefore the overall hydropower resources potentially exploitable in Nigeria are in excess of 11,000MW. Small hydropower systems can be set up in all parts of Nigeria so that the potential energy in the large network of rivers can be tapped and converted to electrical energy.

Solar Energy

Solar energy is the most promising of the renewable energy sources because of its apparent limitless potential. The sun radiates its energy at the rate of about 3.8×10^{23} kW per second. It has been confirmed that Nigeria receives 5.08×10^{12} kWh of energy per day from the sun and if solar energy appliances with just 5% efficiency are used to cover only 1% of the country's surface area then 2.54×10^6 kWh of electrical energy can be obtained from solar energy. This amount of electrical energy is equivalent to 4.66 million barrels of oil per day (Sambo, 2005).

Biomass Energy

Biomass energy refers to the energy of biological systems such as wood and wastes. The biomass resources of Nigeria can be identified as wood biomass, forage grasses and shrubs, residues and wastes (forestry, agricultural, municipal and industrial) as well as aquatic biomass.

Wood, apart from being a major source of energy in the form of fuel wood is also used for commercial purposes in various forms as plywood, sawn wood, paper products and electric poles. For energy purposes, Nigeria is using 80 million meters (43.4×10^9 kg) of fuel wood annually for cooking and other domestic purposes (Sambo, 2005). The energy content of fuel wood that is being used is 6.0×10^9 MJ out of which only between 5 – 12% is the fraction that is gainfully utilized for cooking and other domestic uses (Sambo, 2005). In 1973, the biomass availability in Nigeria was put at 9.1×10^{12} MJ, but at present, the availability has reduced drastically. This is attributable to increased demand for wood in construction, furniture industries and its use as an energy source. Also it is estimated that about 200 million tones of biomass can be obtained from forage grasses and shrubs, and this translates up to 2.28×10^6 MJ of energy.

For crop residues and wastes, estimates of the 6.1 million tones of dry biomass that are produced annually leave residues whose energy content approximate to 5.3×10^{11} MJ

(Sambo, 2005). Animal residue can be converted to biogas and estimates show that this is of the order of $5.36 \times 10^9 \text{ m}^3$ which has an energy content amounting to $2.93 \times 10^9 \text{ kWh}$.

Wind Energy

Wind is a natural phenomenon related to the movement of air masses caused primarily by the differential solar heating of the earth's surface. Seasonal variations in the energy received from the sun affect the strength and direction of the wind. The ease with which aero turbines transform energy in moving air to rotary mechanical energy suggests the use of electrical devices to convert wind energy to electricity (Sambo, 2005). Wind energy has also been utilized for decades, for pumping of water as well as for the milling of grains.

**Box 4: Renewable Energy sources
abundant in Nigeria**

- Hydro power
- Solar energy
- Biomass energy, and
- Wind energy

A study on the wind energy potentials for a number of Nigerian cities shows that the annual wind speed ranges from 2.32 m/s for Port Harcourt to a figure of 3.89 m/s for Sokoto (Sambo, 1987). The maximum extractable power per unit area for the same two sites was estimated as 4.51 and 21.97 watts per square meter of blade area, respectively (Sambo, 1987). Although the use of wind energy for water supply has been known for decades, in recent times efforts have been directed largely towards the use of wind power for the generation of electricity and in the past twenty years or so rapid changes in technology have occurred and major wind powered generating plants have been installed, especially in the rural areas of the developed countries.

9.9. Conclusion

The government should strengthen its environmental laws, especially in the areas of enforcement and monitoring. There is no doubt that the federal and state governments have enacted environmental laws that can compete favorably with those of USA and Europe, but the problem has been effective implementation of these laws. There is no way the country can achieve environmental sustainability and sustainable development if the environmental laws are not enforced or implemented effectively. Governments should

therefore double their efforts in this regard if Nigeria would make any appreciable achievement toward reaching any target of the Millennium Development Goals by 2015.

Whereas the DPR should still continue with its statutory functions in the oil and gas industry, it should relinquish the status of an EIA approving agency. Rather, it should receive draft final EIA reports and be represented throughout the EIA process for all oil and gas projects but under the auspices of the Federal Ministry of Environment (FMEV). This should reduce bureaucracy, project costs, and delays.

There is a need for more guidelines and circulars to be produced by FMEV to enhance public involvement and good EIA practices. Also, copies of approved or rejected final EIA and screening reports should be made available at all FMEV zonal offices throughout the country. Apart from its public educational utility, future proponents and consultants can use them as guides.

To achieve effective and efficient environmental management, and eventual environmental sustainability in the Niger Delta region of Nigeria, it would be imperative to implement vigorously the above recommendations. These recommendations would undoubtedly cater for most of the constraints deterring effective implementation of the laudable Nigerian environmental laws, and economic reform packages aimed at alleviating poverty and solving the environmental degradation problems in the Niger Delta region. It is worthy of note to state that for a better result to be achieved in implementing the above recommendations, there must be peaceful atmosphere and unfiltered cooperation among the stakeholders in the region.

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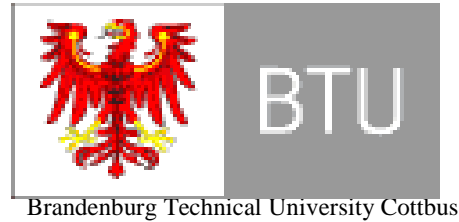
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Appendix 1

FIELD QUESTIONNAIRES

“SUSTAINABLE ENVIRONMENTAL MANAGEMENT IN THE NIGER DELTA REGION OF NIGERIA: EFFECTS OF HYDROCARBON POLLUTION ON THE LOCAL ECONOMY”.

Dear Respondents,

I am Ugochukwu Collins N.C, a PhD student at the Brandenburg University of Technology Cottbus, Germany. I am carrying out a research on the above topic. The objective of this research is to find out the extent to which hydrocarbon exploitation and exploration has impacted on the economy of the local communities in the Niger Delta region hosting the multinational oil Companies. This research at the end would proffer recommendations that could help in the sustainable planning and development of the region, which is considered the oil base of Nigeria.

I therefore kindly solicit your cooperation in filling out the attached questionnaire, while assuring you that all furnished information would be treated with utmost confidentiality and strictly for academic purpose.

Contact Information

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PLEASE FILL IN THE BLANK SPACES PROVIDED AND TICK THE BOX (ES) WHOSE INFORMATION APPLIES TO YOU.

PART A- DEMOGRAPHIC DATA

1) Which community in the Niger Delta region of Nigeria do you come from?

.....

2) What is your age group?

18-30yrs ☐ 31-45yrs ☐ 46-60yrs ☐ 60-90yrs ☐

3) What is the level of your formal education?

Primary ☐ Secondary ☐ Post secondary/University ☐ No formal education ☐

4) What is your occupation?

Public sector ☐ Private sector ☐ NGO ☐ Unemployed ☐ Housewife ☐ others ☐

PART B- LOCAL ECONOMY

5) What is the main source of income for the people in your community?

Farming ☐ Fishing ☐ Transportation ☐ Public service ☐ others ☐

6) “If your answer in (5) is farming and/or fishing, how would you rank the recent yield?”

Very good ☐ good ☐ Average ☐ bad ☐ very bad ☐ I don’t know ☐

7) What factors do you think could be responsible for your answer in (6) above?

i).....
ii).....
iii).....

PART C- ENVIRONMENTAL CONDITIONS

8) “Would you please list the companies operating within (the boundaries of) your community?”

.....
.....

9) According to your knowledge, are there gas flares in your community?

Yes ☐ No ☐ I don’t know ☐

10) According to your knowledge, have there been any oil spills in your community in the last one year?

Yes ☐ No ☐ I don't know ☐

11) If your answer above is "yes", has clean up been carried out?

Yes ☐ No ☐ I don't know ☐

12) Do you think there are negative impacts on the livelihood of your community arising from the activities of oil companies operating therein?

Yes ☐ No ☐ I don't know ☐

PART D- DEVELOPMENTAL ACTIVITIES

13) Are you aware of any developmental projects going on in your community?

Yes ☐ No ☐ I don't know ☐

14) If your answer above is "yes", would you list the developmental projects that are going on in your community?

.....
.....
.....

15) Do you know who initiated the projects listed above?

Government ☐ Oil Company ☐ NGO ☐ Others ☐ I don't know ☐

16) "Do you know about any economic incentives coming to your community from the Government or the oil companies operating therein"?

Yes ☐ No ☐ I don't know ☐

17) "Are you aware of any environmental management programmes put in place in your community"?

Yes ☐ No ☐ I don't know ☐

18) If your answer in (17) is "yes", do you know who the managers/initiators of these programmes are?

Government ☐ Oil Companies ☐ NGOs ☐ Others ☐ I don't know ☐

THANK YOU FOR YOUR RESPONSE

Appendix 2

Structured interview questions with some Management Staff of some Oil Companies operating in the Niger Delta region of Nigeria.

- 1) Could you please mention the communities in the Niger Delta where your company operates;
- 2) Have there been spillages in these communities in the last one year, if yes, has clean-up been carried out?
- 3) What developmental projects are being initiated in these communities by your company?
- 4) Which environmental projects are being implemented by your company in order to curb the environmental hazards emanating from your operations in these communities?
- 5) How is your company empowering the locals from these communities in order to ensure their economic well-being?

Appendix 3

Category 1 or Mandatory Study Activities (FEPA, 1992).

Type of Development	Minimum Size or Capacity
Agriculture	
a) Land conversion from forest to agricultural production	500 hectares
b) Resettlement of families	100 hectare
c) Development of Agricultural estates	500 hectares
Airport	
a) Construction of Airports	2,500 hectares
b) Airstrip in state and National parks	All
Drainage and Irrigation	
a) Surface areas of dams, man-made lakes	200 hectares
b) Virgin Forest drainage	100 hectares
c) Wetland drainage	100 hectares
d) Irrigation Schemes	5,000 hectares
Land Reclamation	
a) Coastal reclamation	50 hectares
Fisheries	
a) Fishing harbours	All
b) Harbour expansion leading to 50% increase in fish landing	All
c) Clearing of Mangrove swamp forests	50 hectares
Forestry	
a) Conversion of hill forest land to other land uses	50 hectares
b) Logging of forest land in water reservoirs or catchment areas	All
c) Conservation of mangrove swamps for industrial, housing, or agricultural use	50 hectares
d) Clearing of mangrove swamps on	All

islands near national parks	
Housing	
a) Housing development	50 hectares
Industry	
a) Chemical plant production	100 tons/day – All sizes
b) Non-metallic – Cement - Lime	30 tons/hours 100 tons/day
c) Iron and steel – Iron ore (required raw materials) scrap iron	100 tons/day
d) Ship yards – dead weight tonnage	5000 tons
e) Pulp and paper industry	50 hectares
Infrastructure	
a) Hospital with recreational facilities	50 hectares
b) Industrial estate for medium heavy industries	50 hectares
c) Construction of expressways	All
d) Construction of national highways	All
e) Construction of new Townships	All
Ports	
a) Construction of Ports	All
b) Expansion of Ports by 50% capacity	All
Mining	
a) Mining of materials in new areas	250 hectares
b) Processing of Ore, aluminum, copper, gold, or tantalum	250 hectares
c) Sand dredging	50 hectares
Petroleum	
a) Oil and gas field development	50 kilometers
b) Construction of off-shore pipelines	Same
c) Construction of oil and gas separation, processing, handling, and storage facility	Same
d) Construction of oil refineries	Same
e) Production depots for storing petrol, gas,	60,000 barrel

or diesel	
Power generation and transmission	
a) Stream generated power station	10 megawatts
b) Dams and hydroelectric power schemes	Same
i) dams over 15 meters high	40 hectares
ii) reservoirs with surface area	Same
c) Construction of combined cycle power stations	400 hectares
Quarries	
a) Quarrying aggregate of limestone, silica, granite, and other solid minerals near residential, commercial, and industrial developments.	400 hectares
Railways	
a) Construction of new routes	All
b) Construction of branch lines	All
Transportation	
a) Construction of rapid transport projects	All